INVESTING IN MICROFINANCE:
AN ANALYSIS OF FINANCIAL AND SOCIAL RETURNS

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The Faculty of Economics, Business Administration and Information Technology of the University of Zurich hereby authorises the printing of this Doctoral Thesis, without thereby giving any opinion on the views contained therein.

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Julia Meyer

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LIST OF ABBREVIATIONS

ALB	Average Loan Balance
ALB_GNI	Average Loan Balance in Relation to GNI per Capita
BiH	Bosnia & Herzegovina
CAL	Capital Allocation Line
CALVIN	Calvert Social Index
CAPM	Capital Asset Pricing Model
CDO	Collateralised Debt Obligation
CDP	Carbon Disclosure Project
CGAP	Consultative Group to Assist the Poor
COOP	Credit Unions / Cooperatives
CSR	Corporate Social Responsibility
DCF	Discounted Cash Flow
DFI	Development Finance Institution
DJSI	Dow Jones Sustainability Indexes
DSI	Domini Social Index
EAP	East Asia and Pacific
ECA	Eastern Europe and Central Asia
ELMI	Emerging Local Markets Index
EMBI	Emerging Markets Bond Index
ESG	Environment, Social, Governance
ESI	Ethibel Sustainability Index
Eurosif	European Sustainable Investment Forum
FCP	Fonds Commun de Placement
F/I	Fixed-Income
FINMA	Swiss Financial Market Supervisory Authority
FSS	Financial Self-Sustainability
FX	Foreign Exchange
GDP	Gross Domestic Product
GFI	Global Financial Index
GMI	Global Microfinance Index
GNI	Gross National Income
HNWI	High Net Worth Individual
IPO	Initial Public Offering

ISIN	International Securities Identification Number
KPI	Key Performance Indicator
LAC	Latin America and the Caribbean
LEGAL	Legal Status
LIBOR	London Interbank Offered Rate
MENA	Middle East and North Africa
MF	Microfinance
MFI	Microfinance Institution
MFIF	Microfinance Investment Fund
MFO	Microfinance Lending Organisations
MII	Microfinance Investment Intermediary
MIV	Microfinance Investment Vehicle
MIX	Microfinance Information eXchange
NA	North America
NAV	Net Asset Value
NBFI	Non-Banking Financial Institution
NDA	Non-Disclosure Agreement
NGO	Non-Governmental Organisation
OLS	Ordinary Least Squares
OPEXP	Operating Expenses
OSS	Operational Self-Sufficiency
PAR	Portfolio at Risk
PE	Private Equity
RE	Real Estate
ROA	Return on Assets
ROE	Return on Equity
RURBANK	Rural Bank
SA	South Asia
SICAF	Société d'Investissement à Capital Fixte
SICAR	Société d'Investissement à Capital Risque
SICAV	Société d'Investissement à Capital Variable
SIF	Social Investment Forum
SIMS	Sustainability Information Management System
SME	Small and Medium Entities
SMI	Swiss Market Index

SMX	Symbiotics Microfinance Index
SPTF	Social Performance Task Force
SRI	Socially Responsible Investment
SSA	Sub-Saharan Africa
TER	Total Expense Ratio
UNPRI	United Nations Principles for Responsible Investment
US	United States
WCED	World Commission on Environment and Development
YIELD	Portfolio Yield (nominal)
YIELDR	Portfolio Yield (real)
ZKB	Zürcher Kantonalbank

PART I: FUNDAMENTALS

1. INTRODUCTION

1.1 BACKGROUND AND MOTIVATION

Social investments have gained importance in recent years (LUXFLAG (ed.), 2010a, 1). In particular, private and institutional investors consider social investments as interesting opportunities because of their two-fold return structure (social and financial). Microfinance is part of the social investment sector. The primary goal of microfinance is to facilitate access to funds in the world's least developed regions by means of the provision of so-called microcredits[1] (Felder-Kuzu, 2004, 19). Such microcredits represent opportunities to empower small-scale entrepreneurs in implementing their business ideas and improving their living standards. The concept is based on a reasonable belief in the borrowers' ability to repay the loans and to manage the funds in a trustworthy manner, leading to a self-supporting standard of living despite their impoverished backgrounds. At the same time, microfinance is a profitable and sustainable business that is gaining the interest of investors. This duality expresses the so-called double bottom line of the microfinance concept, achieving both social and financial returns. Besides the provision of loans, some institutions offer other financial services such as savings and insurance (Armendáriz / Morduch, 2010, 169). The long-term goal of microfinance is the development of a fully-fledged financial sector that provides daily financial services to the whole population (responsAbility (ed.), 2011b; CGAP (ed.), 2004).

However, to date the "Microfinance" asset class[2] is still at an early stage. While the value of assets invested in microfinance is rising constantly, reaching USD 7 billion in 2011, transparency is lacking (MicroRate (ed.), 2012, 4). This lack of transparency and timely data availability for microfinance institutions (MFIs) and microfinance investment vehicles (MIVs) in particular, represents the greatest challenge for research (O'Donohoe et al., 2009, 1; J.P. Morgan / CGAP (ed.), 2010a, 1). Directly related to the problem of missing data, there are no generally accepted key performance indicators (KPIs) or benchmarks for the microfinance investment sector (Goodman, 2007, 15). Missing performance information is particularly prevalent for microfinance invest-

1 Microcredits amount to between USD 50 and USD 5,000 depending on region and type of institution.

2 Microfinance sometimes is indicated as an asset style or part of the "socially responsible investments" asset class rather than being a distinct asset class (see Dorfleitner et al., 2011, 138).

ments because the duality of social and financial factors makes the assessment of returns complex. At the same time, the use of recent data to attract new clients and investors is important in this rather innovative sector. Given the attributes of alternative asset classes, diversification effects on portfolios are expected. However, risk is difficult to assess because microfinance investments are less diversified than standard funds (e.g. currency, country risk) (Abrams, 2008, 2). Another significant issue is the weakness of reporting and governance standards (Pouliot, 2005, 149), which leads to challenges when comparing investments. The level of transparency varies among the funds, as some vehicles regularly provide investors with information by means of factsheets; however, it is difficult to evaluate and interpret the information provided because of the lack of benchmarks and regulation.

To sum up, non-transparency in microfinance is an important issue as it complicates research and alienates investors. Demand from investors for more transparent products increased as a result of the crisis that hit the financial markets around 2008. This disparity between transparency and investors' expectations lies at the root of the present research project.

1.2 PURPOSE OF THE STUDY

International investors interested in microfinance often make use of so-called microfinance investment intermediaries (MIIs) rather than directly investing in MFIs. Almost half of all microfinance funding is channelled through MIIs in the form of MIVs, holding companies and peer-to-peer lending platforms[3] (El-Zoghbi, 2011, 2). Investing in MIVs rather than directly in MFIs or projects brings several advantages, including the diversification of risks between institutions and countries, the availability of more flexible instruments and financial discipline, among others (Goodman, 2007, 34).[4] MIVs can be separated into investment funds and structured products (Hechler-Fayd'herbe / Lüscher, 2008, 1). The focus of this paper is on microfinance investment funds (MFIFs).

When it comes to decision-making, existing and potential investors typically rely on benchmarks, such as the Money Market Index, MSCI World, MSCI Emerging Markets

[3] e.g. Kiva or Babyloan.

[4] Additionally, traditional reasons for the use of investment companies rather than direct investing are important (see 5.2.1).

and others. Furthermore, an index facilitates the comparison of different investment possibilities within an asset class as well as correlation analyses with other asset classes (Lhabitant, 2006, 488). Performance benchmarks support the measurement of the investment performance of institutional fund managers and provide stakeholders with reference points for monitoring their investments (Lhabitant, 2006, 509). However, in the field of microfinance the only available index is the Symbiotics Microfinance Index (SMX). The SMX exhibits certain shortcomings, which will be outlined in detail. The aim of this analysis is to calculate one or more preferably homogeneous indexes including all the existing funds that agree to contribute data. The index calculation is based on the description of different fund structures and the elaboration of particular qualitative attributes of the microfinance investment universe. A detailed overview of the microfinance investment sector accompanied by an efficient benchmark will reveal the potential of this asset class to institutional as well as retail customers. Furthermore, a comparison of the calculated index with the existing SMX illustrates differences and possible shortcomings or disadvantages of one or the other.

Due to the specific nature of microfinance, two additional aspects besides financial return are of interest to the investors. First, alternative asset characteristics may offer the potential for diversification effects when a microfinance fund is added to an existing portfolio. This effect is investigated by comparing the calculated index with several socially responsible investment (SRI) indexes and traditional[5] indexes.

Second, from an investor's point of view, the social return of the investment is interesting as well as its relationship to the financial return. Microfinance investors start to base their investment decisions not only on financial but also on social factors (Urgeghe, 2010, 80; CGAP (ed.), 2012, 2). However, it is not clear how social factors interact with financial return. Following the calculation of the indexes, a second empirical part of this thesis therefore assesses the relationship between financial and social return from an investor's point of view.

[5] In this paper, "traditional" is used to describe investments or indexes apart from SRI that pursue financial return (sometimes also referred to as commercial).

The lack of transparency in the industry accompanied by the potential for diversification effects and the investors' interest in the interaction between financial and social return lead to the following research questions:

- How can microfinance investment funds be benchmarked by one or more preferably homogeneous indexes?
- Might including microfinance in a traditional portfolio lead to diversification possibilities?
- How does the consideration of social return relate to the financial performance from an investor's point of view?

In summary, this paper aims to provide existing and potential investors with information on the special features and possible benefits of investments in microfinance. A comprehensive picture of the market includes both financial and social performance aspects. This analysis can only capture the current market situation in a young industry that is developing and changing rapidly.

1.3 STRUCTURE OF THE STUDY

The thesis has three main sections (see Table 1.1). The first part gives a brief overview of the fundamentals and forms a basis for the following two parts. Part II provides a broad theoretical overview and investigates the asset allocation process for socially responsible investments and microfinance, the special characteristics of microfinance investment funds and the performance measurement. The empirical study in part III focuses on the calculation of indexes and the interaction between social and financial return. Following the description of data selection and classification of funds, the results of the index calculation, the comparison with other indexes and the econometric analysis of the relationship between social and financial performance are presented.

Table 1.1 Structure of the Thesis

Part I: Fundamentals	• Introduction • Socially Responsible Investments • Fundamentals of Microfinance
Part II: Brief Theoretical Background	• Asset Allocation for Socially Responsible Investments • Microfinance Investment Funds • Performance Measurement of Microfinance Investment Funds
Part III: Empirical Study	• Data Selection • Classification of Funds • Index Calculation and Comparison with Socially Responsible / Traditional Indexes • Econometric Analysis: Social versus Financial Return • Conclusion

The sections are divided into the following Chapters:

Part I Fundamentals

After the introduction, the second Chapter gives a short overview of socially responsible investments in general. Chapter 3 then presents details about microfinance, its history, an overview of the loan market, the social impact and current developments.

Part II Brief Theoretical Background

Theoretical foundations of the analysis are based on SRI or traditional investments because not much theory exists so far for the microfinance market. This is why even the theoretical part is somewhat based on empirical results. The responsAbility Global Microfinance Fund is the source most often referred to for illustrative practical examples. Chapter 4 examines asset allocation processes and challenges for SRI and microfinance in more detail. Chapter 5 focuses on microfinance investment funds, current developments and the classification of the funds. Chapter 6 reviews microfinance investment funds' performance measurement approaches, while focusing on financial and social performance and methodologies to calculate microfinance investment fund indexes.

Part III Empirical Study

The empirical study is divided into two parts, the first one focusing on microfinance investment funds, and the second on microfinance institutions. The data selection process used for both parts of the empirical study is described in Chapter 7. For the first analysis, a survey is conducted to compile data on microfinance investment funds. The second part is based on a data file from Microfinance Information eXchange (MIX), a microfinance data provider focussing on microfinance institutions. Chapter 8 develops the classification of the funds based on the results of the survey as well as information on the funds' portfolio (MFIs). In Chapter 9 the index is elaborated and compared with traditional and socially responsible indexes. Chapter 10 describes the empirical method of the second empirical analysis, the regression model and the results from the estimation. In conclusion, Chapter 11 discusses the main results and particular limitations and describes possible further research.

2. SOCIALLY RESPONSIBLE INVESTMENTS

2.1 DEFINITION OF SOCIALLY RESPONSIBLE INVESTMENT

Socially responsible investments, also known as sustainable investments[6], differ from standard investments in that they focus not only on financial returns but also on environmental, social and governance factors. The origins of socially responsible investing go back hundreds of years, when, for religious reasons, some investors avoided investing in companies that focused only on financial success. In the United States (US), the roots of the current trend to social investments lie between 1970 and 1990, when several incidents increased the sensitivity to social responsibility (just to name a few: the war in Vietnam, the Cold War, apartheid in South Africa and environmental issues such as Chernobyl) (Schueth, 2003, 190).

When it comes to defining socially responsible investments, the term "sustainability" plays a decisive role.

The World Commission on Environment and Development (WCED) (under the presidency of Gro Harlem Brundtland in 1987) defines sustainability as follows:

"*Development that meets the needs of the present without compromising the ability of future generations to meet their own needs*" (WCED, 1987; Staub-Bisang, 2011, 20).

The European Sustainable Investment Forum (Eurosif) claims the following definition for "sustainable financial investments":

"*Sustainable and responsible investing is a generic term covering any type of investment process that combines investors' financial objectives with their concerns about environmental, social and governance (ESG) issues*" (Eurosif (ed.), 2010, 8).

According to the UN Principles for Responsible Investment (UNPRI):

"*As institutional investors, we have a duty to act in the best long-term interests of our beneficiaries. In this fiduciary role, we believe that environmental, social, and corporate governance (ESG) issues can affect the performance of investment portfolios (to varying degrees across companies, sectors, regions, asset classes and through time). We also recognize that applying*

[6] Socially responsible investments and sustainable investments are used interchangeably here, in common with other researchers (Renneboog et al., 2008, 1723; Wittwer, 2011, 4).

these principles may better align investors with broader objectives of society" (UNPRI Online, 13.08.2012).

Focusing on socially responsible investments in the US, Schueth defines SRI as "*The process of integrating personal values and societal concerns into investment decision-making*".

These different definitions for sustainable investments or socially responsible investments show that both are broad terms being applied to diverse approaches that mostly include the consideration of ESG criteria, which comprise environment (E) (the conservation of natural resources in the broadest sense), social concerns (S) and good corporate governance (G).

According to Eurosif, socially responsible investments can be classified corresponding to different selection strategies into "core SRI" and "broad SRI" (see Table 2.1).

Table 2.1 SRI Strategies[7]

Name	Type
Core SRI	• Positive Screening • Negative Screening: Norms and Value-/ Ethics-Based Exclusions (Three or More Criteria) • Best-in-Class • SRI-Thematic Funds, e.g. Microfinance Investment Funds
Broad SRI	• Negative Screening: Simple Screening (One or Two Exclusion Criteria, Norms or Value-/ Ethical-Based) • Integration of ESG-Criteria • Engagement

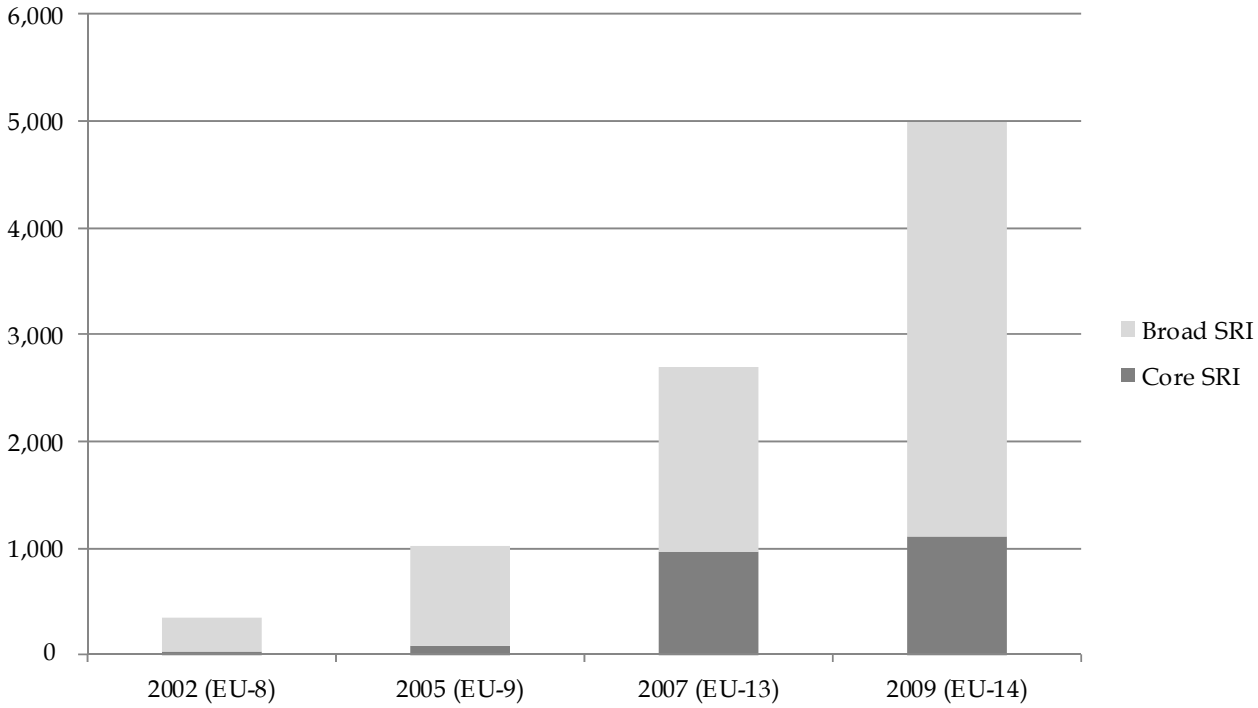
Source: own research, based on Eurosif (ed.), 2010, 8.

In this context "core" stands for investments that are strongly aligned with sustainability whereas "broad" is a less strict denotation that considers only one or two norms or values. Besides simple screening methodologies, broad SRI includes the integration of ESG-criteria into investment processes or active shareholder-engagement (Staub-Bisang, 2011, 37). In Europe, broad SRI still dominates, although starting in 2002 the

[7] Another possibility is to divide SRI into direct (engagement) and indirect strategies (positive and negative screening) (Globalance (ed.), 2012, 18). Eurosif ceased to use the classification of SRI into core and broad, as mentioned in their report in 2012, by arguing that the cultural and historical diversity of Europe influences the countries' and organisations' definition of SRI and therefore the consensus of a unified definition of SRI is difficult (Eurosif (ed.), 2012, 12).

fraction of core SRI rose, reaching approximately EUR 1,000 billion in 2009 (see Figure 2.1). For the US, besides screening and shareholder advocacy, a third strategy of socially responsible investing is presented, namely Community Investing. This strategy describes investments with the expectation of a repayment in form of a financial return while at the same time following the purpose of helping poor and underserved people (SIF Foundation (ed.), 2010b, 4). Nevertheless, in this paper the classification by Eurosif will be elaborated, as it uses a broader approach (Community Investments are covered within SRI-thematic investments).

Figure 2.1 Core and Broad SRI in Europe, 2002-2009 (in Billions of Euros)[8]



Source: Eurosif (ed.), 2010, 11.

2.1.1 CORE SRI

Eurosif defines positive screening strategies as well as stronger forms of negative screening as core SRI. Positive screening involves the choice of a particular investment according to a specific positive criterion. Core negative screening strategies comprise three or more criteria for excluding investments, such as involvement in tobacco, alcohol and animal testing. Table 2.2 shows common examples of criteria used in negative and positive screening strategies for SRI.

[8] The number of participating European countries increased from 8 in 2002 to 14 in 2009.

Table 2.2 Common Examples for Screening Criteria in SRI

Screens	Type	Criteria
Labour Relations / Workplace Conditions	Positive	Social
Human / Animal Rights	Positive	Social
Renewable Energy	Positive	Ecological
Environment	Positive	Ecological
Corporate Governance	Positive	Ethical
Tobacco	Negative	Ethical
Alcohol	Negative	Ethical
Gambling	Negative	Ethical
Weapons / Nuclear Power / Firearms	Negative	Ethical
Pornography	Negative	Ethical
Abortion / Birth Control	Negative	Ethical
Animal Testing	Negative	Ethical

Source: based on Geczy et al., 2005, 30; Renneboog et al., 2008, 1729; Staub-Bisang, 2011, 26.

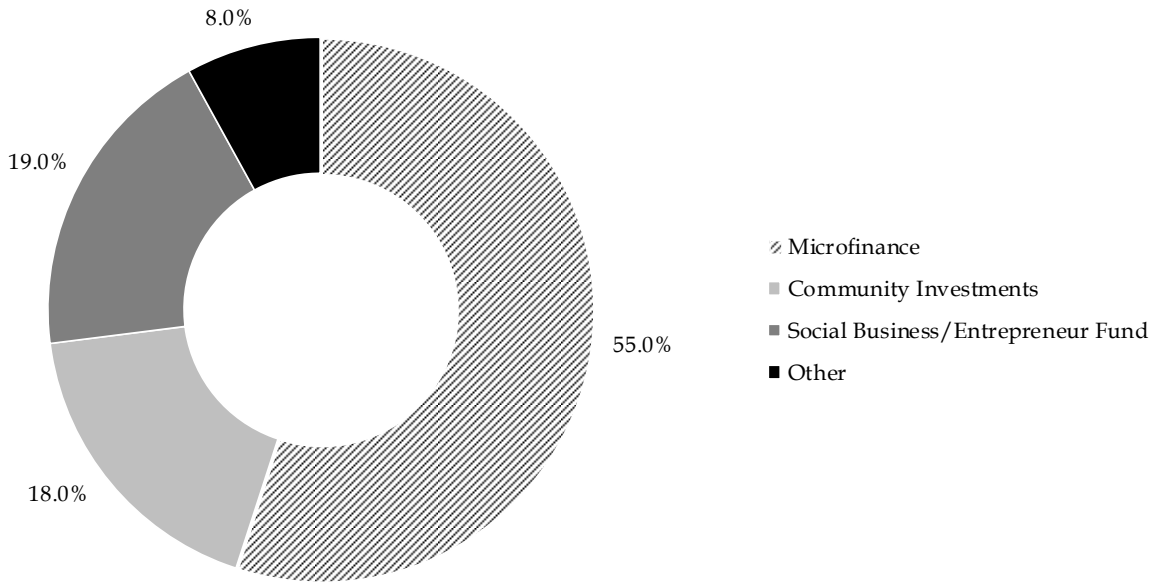
Best-in-class SRI funds aim to include companies and investments from all industries and sectors while choosing the best ones among them relative to social responsibility criteria. This means that best-in-class choices would include, for example, the oil / petroleum company, that performs best against a defined catalogue of social responsibility criteria. This approach is criticised for including all industry sectors: BP is included in the DJSI World[9] in 2009, and in 2010 the company became responsible for one of the worst environmental crises with the explosion of their oilrig "Deep-water Horizon" (Schadwinkel, 23.10.2012; BP (ed.), 2010). However, best-in-class approaches may contribute to increased competition regarding sustainability criteria, leading to improved social responsibility within sectors that would otherwise be excluded from social screening processes (Staub-Bisang, 2011, 31).

An example of a strong positive screening strategy is when a fund invests exclusively in companies / funds that support a certain issue (e.g. human rights, the environment).

9 Dow Jones Sustainability Index World.

Such SRI-thematic investments belong to the category of impact investing, meaning that a concrete ecological or social / sustainable gain is pursued without any regard for diversification. After a decline in 2009, SRI-thematic investments experienced strong growth in Europe resulting in EUR 48 billion in 2011 (Eurosif (ed.), 2012, 13).

Figure 2.2 Breakdown of European Impact Assets by Category 2012



Source: Eurosif (ed.), 2012, 23.

Microfinance investments are one example of impact investment strategies, in Europe accounting for the largest part of impact assets with 55% (see Figure 2.2). Other examples include assets in social businesses, community investments or investments related to water, carbon, timber or addressing climate change. One specific example of a SRI-thematic fund is the Pictet-Water-Fund-P[10], which exclusively invests in companies that operate in the water sector (Staub-Bisang, 2011, 33).

2.1.2 BROAD SRI

Broad screening strategies include on the one hand the exclusion of investments based on one or two criteria, and on the other hand the integration of ESG-criteria or engagement of the investor.

[10] See http://www.pictetfunds.com.

Integration means the direct inclusion of sustainability aspects into an investment policy, which results in the inseparable combination of financial and ESG factors being associated with investment decisions. One way to facilitate the integration of ESG criteria is subscribing to the UN Principles for Responsible Investment (UNPRI), an approach that is mostly used by investors focusing on financial return but aiming to learn about ESG criteria by integrating them for risk purposes.

Engagement means active contact between an investor and the management of the company invested in. By means of a usually friendly dialogue or the exercise of voting rights at general meetings, a single investor or a group of investors have the opportunity to voice their concerns about environmental or social shortcomings (Staub-Bisang, 2011, 39). Examples of active engagement are the Carbon Disclosure Project (CDP) or engagements by the Ethos-Foundation.

Broad SRI can be criticised on account of the weakness of the terms and conditions that are applied (Wittwer, 2011, 17ff.). A fund that excludes companies according to one or two criteria (for example gambling and alcohol) could be classified as SRI in the broad sense. However, as only one or two criteria are taken into account, there remain many possibilities for companies or funds to behave without regard for social responsibility in other respects.

2.2 *BENCHMARKING SRI*

2.2.1 *BENCHMARKING FINANCIAL RETURN*

Some categories of SRI, especially those based on broad screening strategies, are already well established and their transparency is comparable with traditional investments.[11] For these investments, existing benchmarks are useful for evaluating and comparing the financial returns of different investment possibilities.

The *Dow Jones Sustainability Indexes (DJSI)* were launched in 1999 in collaboration between Dow Jones Indexes and SAM[12] (Dow Jones Indexes / SAM, 2011, 2). These indexes track the stock performance of the leading sustainability-driven companies worldwide. To date, five different DJS indexes exist, comprising a World Index and

[11] See Chapter 4.1.

[12] Investment Boutique in Zurich: http://www.sam-group.com/.

four regional ones covering Europe, North America, Asia Pacific and Korea. The indexes follow a best-in-class approach, screening companies according to different sustainability key performance indicators (KPIs) (Dow Jones Indexes / SAM, 2011, 1). Furthermore, sub-indexes exist that apply only parts of the criteria defined. Industry super-sectors are defined and a list of the top companies in each super-sector is published annually. SAM's corporate sustainability score includes environmental, social and governance (ESG) dimensions, which are evaluated using an online questionnaire filled in by the companies and crosschecked by SAM using documentation provided by the companies (Dow Jones Sustainability Indexes / SAM, 2011, 10). This information is analysed using SAM's Sustainability Information Management System (SIMS) that uses a pre-defined scoring and weighting structure (Dow Jones Sustainability Indexes / SAM, 2011, 13). The results obtained identify the top 10 percentages among companies from all sectors in terms of sustainability (Dow Jones Sustainability Indexes / SAM, 2011, 17). Foreign currency stock prices are converted into US Dollars using the latest available exchange rates (Dow Jones Sustainability Indexes / SAM, 2011, 22). The DJSI is a free-float market-capitalisation-weighted index. Free-float defines the portion of the total number of shares outstanding less block ownership; where block ownership is defined as the sum of all holdings greater than 5% (excluding shares held by investment companies and funds) (Dow Jones Sustainability Indexes / SAM, 2011, 24).

The *Ethibel Sustainability Index* comprises the shares of the top performing companies in terms of corporate social responsibility (CSR). There are two indexes: one accounting for European countries alone, while the other takes a global approach (Europe, North America and Asia Pacific). The Ethibel Sustainability Index Excellence Europe chooses the 200 top companies, starting with A-ratings, B-ratings and finally, C-ratings.[13] The companies included must have a market capitalisation that is greater than 0.05% of the index market capitalisation and an adequate balance of industries is sought. The Ethibel Sustainability Index Excellence Global requires all included shares to have an A or B rating and their free-float market capitalisation must be higher than EUR 10 million. Forum ETHIBEL uses research information on data collection, perfor-

[13] A stands for pioneers, B for best-in-class companies, C for companies with average performance.

mance rating and industry benchmarking provided by the European rating agency Vigeo (Vigeo (ed.), 2010, 5). Companies are analysed on 38 criteria in the following domains:

- Human Rights
- Human Resources
- Environment
- Business Behaviour
- Corporate Governance
- Community Involvement.

The companies are free-float market capitalisation weighted. Two calculation methods exist: one includes multipliers with the aim of equalising the weight of a given sector in the total market capitalisation, while the other one does not.

ING (a global financial institution of Dutch origin) calculates the *ING Socially Responsible Investments Index* based on the performance of 50 socially responsible stocks. ING selects the stocks based on their potential to outperform a global universe of socially responsible companies (HOLT Crédit Suisse Online, 04.06.2012).

The approach of the *CALVIN (Calvert Social Index)* is based on the exclusion of certain companies by applying negative screening strategies. The index includes 660 large US-based companies that follow sustainable and responsible policies (Calvert Online, 04.06.2012).

The FTSE4Good Policy Committee manages the *FTSE4Good Index* by including only companies that meet several social responsibility criteria according to a comprehensive ESG-rating methodology. The FTSE4Good Index is weighted using the free-float capitalisation of the stocks. The largest companies are included in the index first, and a liquidity rule ensures that each company has a certain minimum percentage turnover from its free-float adjusted shares (FTSE Online, 29.05.2012).

The service provider *MSCI* is in charge of several different indexes that are grouped into the following categories: best-in-class, value-based, universal owner, environmental and custom indexes (MSCI Online, 29.05.2012). The indexes are based on 20 years of work by the research company KLD, which became part of MSCI in 2010. The often-

cited *Domini 400 Social Index* is also based on work by former KLD Research & Analytics and has now been transferred into the *MSCI KLD 400 Social Index*.

Figure 2.3 Overview on Socially Responsible Indexes

Indexes	Screening Strategy	ESG Data used
DJSI	Best-in-Class	SAM's Corporate Sustainability Score
Ethibel Sustainability	Positive Screening	Vigeo
ING Socially Responsible	Positive Screening	ING
Calvert Social	Negative Screening	Calvert Social Research Department
FTSE4Good	Positive Screening	FTSE4Good Policy Committee
MSCI	Best-in-Class/Value Based/Universal Owner/Environmental and Custom Index	KLD/MSCI

Source: own research.

To summarise, the indexes mentioned represent the most important ones in the industry, but do not include any microfinance investments. Rather they include regular companies, excluding some due to insufficient ESG valuation. The indexes are not comparable regarding the criteria for social responsibility as the screening strategy and the measurement approach is not standardised. The mentioned companies use different scores and databases as well as diverse criteria for the inclusion or exclusion of certain securities (see Figure 2.3). Therefore, the financial index returns are not necessarily comparable in terms of direct benchmarking.

Furthermore, none of these indexes specifically accounts for social performance measures. While the eligibility criteria are based on social factors, once a company is included in the index, financial performance is the only attribute that is measured.

2.2.2 *Benchmarking Social Return*

The measurement and disclosure of social or sustainability components of an investment can be applied using various different methodologies. For funds, for example, ESG criteria are evaluated, allowing the investor to compare different investment op-

tions from a sustainability perspective. The Zürcher Kantonalbank (ZKB) has devised a classification methodology to value the sustainability component of investments, awarding grades between A (highest score) and G (lowest score). A single criterion is defined per dimension:

- Environment: CO_2-emissions in relation to total revenue
- Social: indicator for reputation risk
- Corporate Governance: corporate governance rating.

This approach does not result in a quantitative measure; each potential investment is marked with a colour from red (low score) to green (high score), resulting in an ordinal scale and therefore not allowing the calculation of an index. Several companies specialise in analysing investments according to ESG criteria and classifying them (e.g. oekom research AG / INrate AG), enabling investors to compare potential investment possibilities. The German stock exchange (www.boerse-frankfurt.de) provides sustainability information online in a numerical format allowing the asset universe to be scanned for investment opportunities according to ESG criteria (Deutsche Börse Online, 29.05.2012). The possibility exists, therefore, to create an index representing sustainability of companies by combining these methodologies in equal or weighted proportions.

Summing up, to date no index exists that combines financial and social factors of socially responsible investments. Furthermore, existing SRI indexes do not include microfinance investments and are therefore not meaningful for benchmarking purposes related to microfinance.

2.3 *CURRENT DEVELOPMENTS IN SRI*

Evidence shows that the value of professionally administered socially responsible investments in the US rose more than 380% over a fifteen-year period (1995-2010) (SIF Foundation (ed.), 2010a; Schueth, 2003, 189); in Europe the compounded annual growth rate reached 27.3% between 2003 and 2006 (Dieckmann, 2007, 3). Eurosif found that total SRI assets under management in Europe had reached EUR 5 trillion as of December 2009 (Eurosif (ed.), 2010, 11), whereas by the same time, the value approached USD

3 trillion in the US (SIF Foundation (ed.), 2010a).[14] In Switzerland, the sum of sustainable funds, mandates and other financial products rose from EUR 23.0 billion in 2009 to EUR 33.6 billion in 2010. One possible explanation for the tremendous growth rates is the changes in regulation regarding the disclosure of information on ESG-factors by pension funds and regulated companies (especially in Europe) (Renneboog et al., 2008, 1730). Interestingly, the crisis in 2008 may have had a positive impact on the sector as investors became aware of the importance of integrating ESG-criteria to downsize risk (Eurosif (ed.), 2010, 7, SIF Foundation (ed.), 2010a). However, sustainable investment market volume in funds and structured products decreased in Switzerland in 2011 (Knoepfel / Imbert, 2012, 8).

SRI is still not common among retail investors (Eurosif (ed.), 2012, 26). Possible reasons include the lack of specific information and communication that is needed, and customer service representatives in banks who are not used to providing SRI advice. Within the European Union, institutional investors are currently well ahead of retail investors with a 94% share of all investments in SRI (Eurosif (ed.), 2012, 25). In Switzerland institutional investors account for a 96% share of SRI investments, and private investors mostly belong to the category of high net worth individuals (HNWIs[15]). The most popular strategy for sustainable investment by financial service providers in Switzerland is norms or value based exclusion (64.9%), followed by best-in-class (55.3%), and thematic funds (39.4%)[16] (Dittrich et al., 2011, 33 ff.).

SRI is a broad term that is applied to different approaches by investment managers. Particularly since the implementation of the United Nations Principles of Responsible Investment, some funds are labelled as SRI when they include investments in companies that manage certain risks in more efficient ways (resources, renewable energy etc.). Experts usually differentiate between funds pursuing a risk-strategy and funds following an opportunity path. The first of these invest in companies that handle certain risks in an optimised way (for example risks related to water); the latter, however, deliber-

[14] Because the size of the SRI market is larger in Europe, the focus of this Chapter is on the situation in Europe.

[15] HNWI are defined, according to a study by Capgemini & Merrill Lynch, as private investors with available assets of more than USD 1 million (Capgemini/Merrill Lynch (ed.), 2011, 4).

[16] These percentage numbers do not sum to 100 as some financial service providers exhibit more than one screening strategy at the same time.

ately invest only in companies that act within the particular sector (so-called impact investments; for example, companies providing solutions to solve the water problem).

Some asset managers, including Bank Sarasin & Cie. and Vontobel Group, even claim that in the future, all investments proposed to clients will be in some way sustainable. These asset managers describe the sustainability component as being comparable to the quality of management. This would imply that the addition of a sustainability constraint to an investment universe would definitely result in optimised portfolios by considering only companies with good management quality.[17]

The next chapters will go on to discuss possible methods for benchmarking investments in microfinance, based on the analysis of the more established SRI asset class. However, investments in microfinance as part of SRI are somewhat different from traditional SRI investments (see Chapter 4.4). It is therefore reasonable to assume that SRI indexes will not be more suitable for benchmarking of microfinance investments than convenient indexes are.

[17] According to experts' statements at the "Friends of Funds" panel in Zurich on Dec. 13, 2011.

3. FUNDAMENTALS OF MICROFINANCE

3.1 HISTORY OF ORIGIN

Early examples of approaches to facilitate people's access to financial markets include the German cooperative banking system in the 19th century, which comprised two sets of institutions: one associated with Schulze-Delitzsch and the other with Friedrich Raiffeisen (Ghatak / Guinnane, 1999, 196; Guinnane, 2011, 80). Another example is the Irish loan funds, which were granted to around 20% of all Irish households in the mid-nineteenth century (Hollis / Sweetman, 1996, 3).

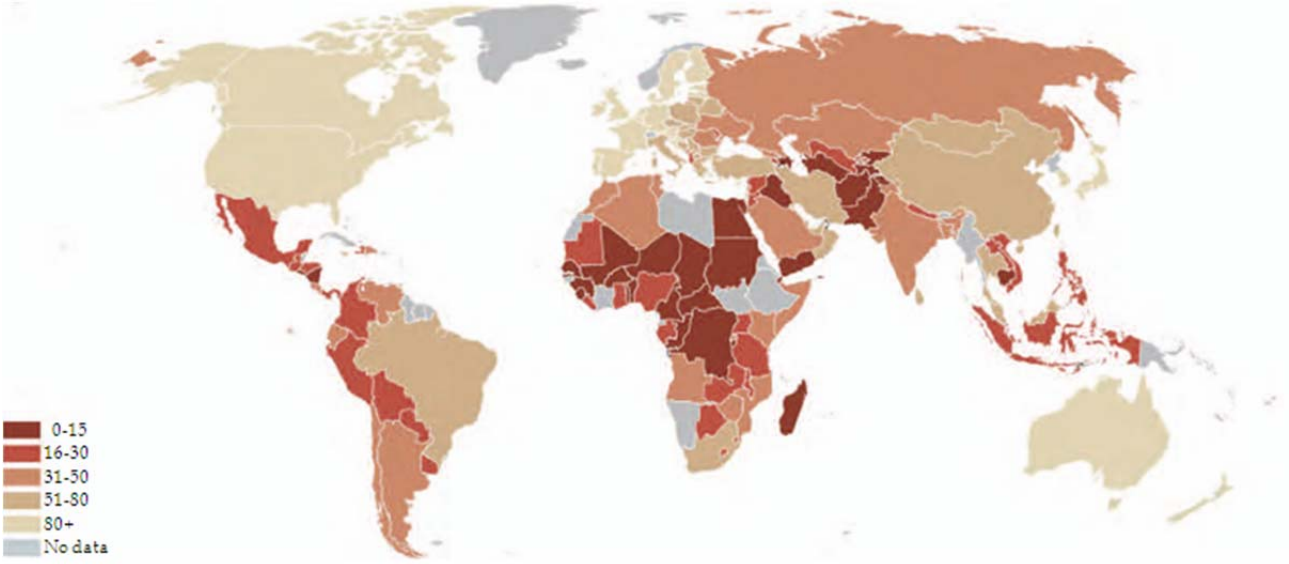
The roots of microfinance go back to about 1976, when Mohammed Yunus started his first projects, which resulted in the foundation of Grameen Bank in Bangladesh a few years later (1983) (Yunus, 2003; Armendáriz / Morduch, 2010, 12; Grameen Foundation Online, 16.05.2012). His idea was to give poor entrepreneurs (especially women), with no access to the financial system, a chance to facilitate their business ideas, providing a powerful tool for financial inclusion and an effective trigger for many regions to help overcome poverty (Yunus, 2007). Among other awards, Muhammad Yunus and the Grameen Bank were granted the Nobel Peace Prize in 2006 for their pioneering work in fighting global poverty through access to financial services (Grameen Foundation Online, 12.09.2011). At around the same time (circa 1980), ACCION International started to develop similar microcredit models in Latin America (ACCION Online, 16.5.2012).

The basic concept of microcredits is to provide entrepreneurs in developing and emerging markets with business loans without requiring standard collateral (Morduch, 1999). Instead, institutions often use dynamic incentives, regular repayment schedules[18] and collateral substitutes to guarantee high repayment rates (Morduch, 1999, 1579). In many countries less than 15% of the population have access to a formal financial institution where, for example, they can open a deposit account (see Figure 3.1). The traditional microfinance regions emerged as a direct response to this situation. Often the following regions are differentiated (according to the definition by the World Bank):

[18] Unlike traditional loans, repayment of microfinance credits usually starts a few weeks after disbursement in weekly collections (Morduch, 1999, 1584).

Latin America and the Caribbean (LAC), Sub-Saharan Africa (SSA) or Africa[19], Eastern Europe and Central Asia (ECA), Middle East and North Africa (MENA), South Asia (SA), East Asia and the Pacific (EAP) and Northern America & Others (NA&Other).

Figure 3.1 Financial Access around the World: Percentage of the Population Having an Account at a Formal Financial Institution (2012)



Source: Demirguc-Kunt / Klapper 2012.

The United Nations (UN) declared 2005 as international year of microcredit, which helped microfinance to become a globally respected topic in both its science and practice.[20] Microfinance can be described as the support of low-income individuals through the provision of access to financial services. The general public's awareness of microfinance is typically limited to the issuing of microcredits by microfinance institutions in developing countries. However, MFI customers are also often offered savings possibilities, micro-insurance and pension solutions (Armendáriz / Morduch, 2010, 169). Besides financial intermediation, microfinance institutions often also provide their customers with so-called social intermediation, such as training in financial literacy and management competences. This means that microfinance goes beyond banking by representing a development tool (Ledgerwood, 1999, 1).

[19] Within this paper, whenever possible Africa is used as term and stands for both SSA and Africa.
[20] http://www.yearofmicrocredit.org.

This research focuses on microcredits rather than on other services provided by MFIs, because it is assumed that loans are the part of the MFI's activities influencing their earnings most and therefore of particular interest to investors.

3.2 LOAN MARKET OVERVIEW

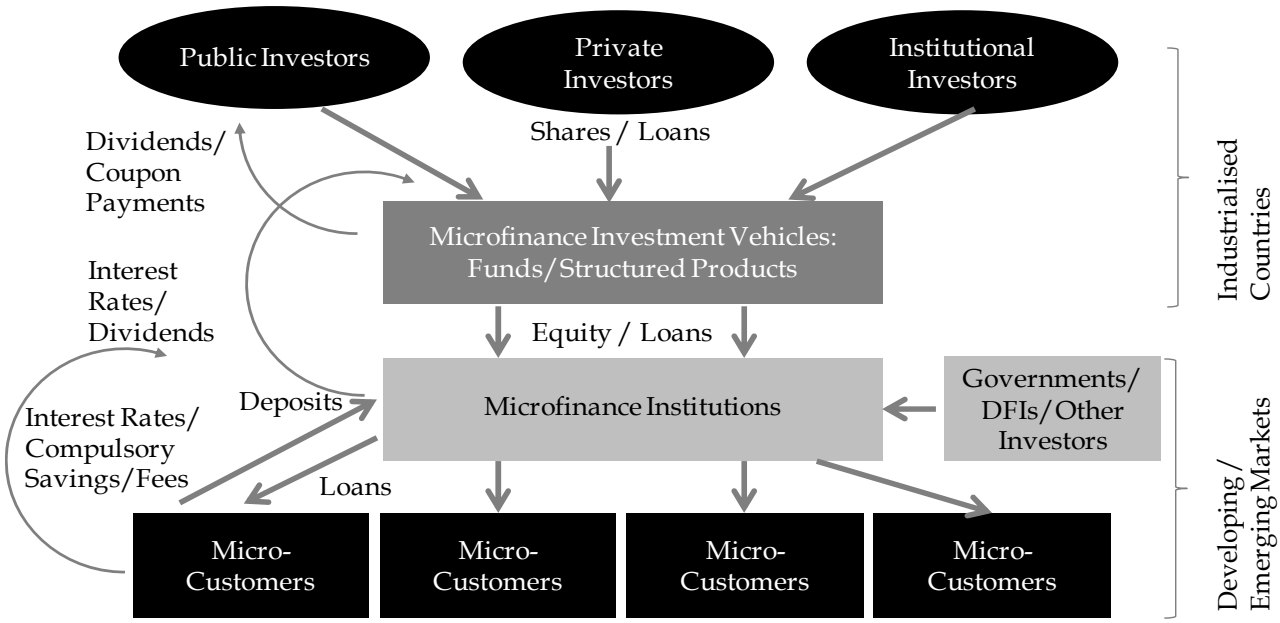
Microloans were originally business loans made with the intention to support and advance business ideas or income-generation in a broader sense. However, in recent years, a trend towards the issuing of consumer credits has been observed (responsAbility (ed.), 2008a, 1). The distinction between the two forms of credit is important, as the traditional business loan is used for productive purposes, whereas consumer loans are not. It is therefore important to ensure that credit analysis procedures and product characteristics match (responsAbility, 2012, 2). Recently the issuance of loans for small and medium entities (SMEs) has become more popular for MFIs (Symbiotics (ed.), 2012a, 14).

Stakeholders of the microcredit market can roughly be divided into several main groups (see Figure 3.2) (Dreher et al., 2010, 30; Goodman, 2007). Microfinance customers and microfinance institutions are present in developing countries. Besides accepting deposits, MFIs ask for credit either within local markets or with international funders to finance loans requested by clients. Because the resources of local funders such as development financial institutions (DFIs) and governments are limited, access to international financial markets is important and is provided by microfinance investment vehicles. However, the proportion of MFIs that are refinanced by international investors is small. According to one estimate, it amounts to approximately 25% (Becker, 2010, 55). Access to capital is a challenge for MFIs as traditional banks hesitate to serve these markets, mostly due to a lack of efficiency and profitability (Symbiotics (ed.), 2012a, 31). Nevertheless, some MFIs succeed to refinance the loans only by accepting savings (e.g. the Grameen Bank in 2012). This thesis focuses on international investors in microfinance rather than considering other sources such as savings, local funders or governments.

Microfinance, as a relatively new market, relies on so-called service providers. Market participants gather information from third parties such as data and information pro-

viders (e.g. MIX, Symbiotics, Consultative Group to Assist the Poor (CGAP) and MicroRate) and traditional rating agencies (e.g. Fitch). Furthermore, numerous special service providers support MFIs with technical assistance.[21]

Figure 3.2 Market Overview



Source: own research, according to Goodman, 2007.

A description of the processes and the relationships between the stakeholders helps to understand the microfinance market.

The entrepreneurs usually live in developing countries and have a business idea or seek support for an existing business. MFIs use different approaches to lend money to them (Cull et al., 2007, F115):

- solidarity or group lending techniques: a whole self-defined group is responsible for the repayment or administration of the loans
- village banking: for larger groups but similar to group lending
- individual-based lending: involving a standard bilateral relationship between the institution and the customer.

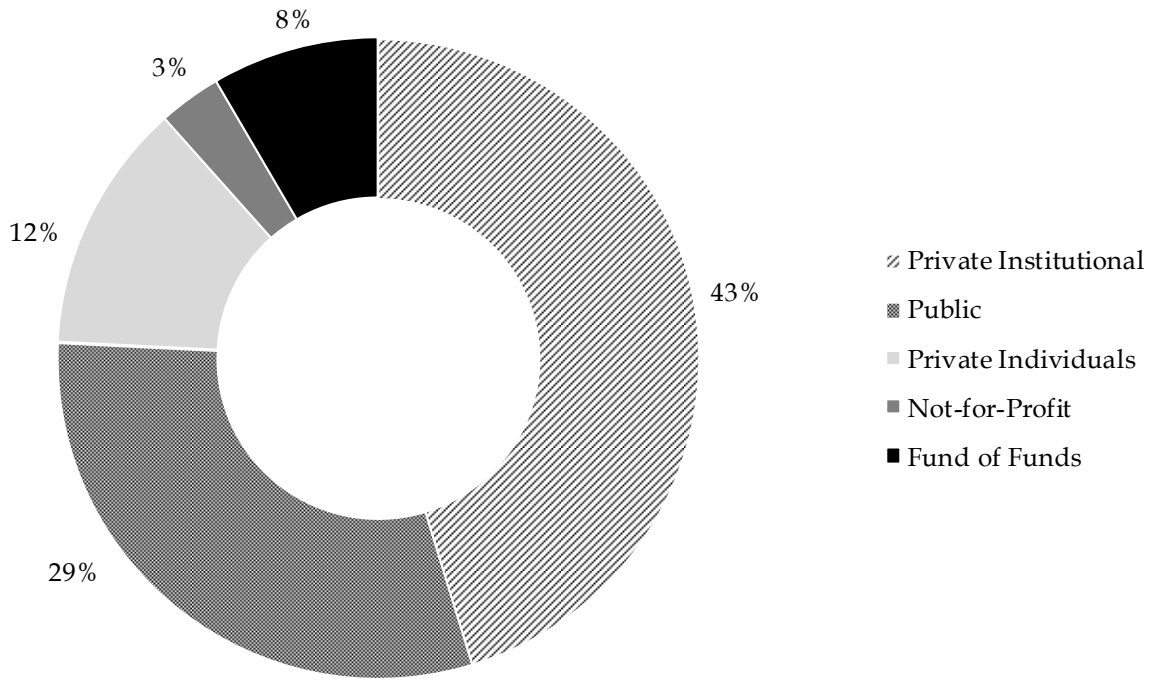
Lending techniques impact the repayment behaviour of customers. Group lending in particular has many advantages, such as for example, a reduction in information prob-

[21] Some examples: Credit Suisse (https://www.credit-suisse.com/responsibility/en/initiatives/microfinance/capacity_building_initiative.jsp); Business and Financial Consulting (http://bfconsulting.com/); in India: http://www.edarural.com; EIF (www.eif.org); PlaNet Finance (http://www.planetfinancegroup.org/); Omtrix Inc (http://www.omtrixinc.com/en/omtrix.html).

lems.[22] Traditionally, repayment rates have been extremely high in microfinance, in almost all cases above 95% (Morduch, 1999, 1571). However, in more recent times a slight deterioration in repayment rates has been observed (see Chapter 3.4.2).

If MFIs demand funding from international investors (represented by MIVs), they are usually subject to a long process of due diligence in which investors check their solvency and profitability. In turn, MFIs pay interest rates or dividends to the MIVs, depending on whether they are following debt or equity investment strategies. The microfinance investment market is highly concentrated with 45% of total market assets under the management of the five largest MIVs in 2011 (MicroRate (ed.), 2012, 9).

Figure 3.3 MIVs: Amount Invested by Type of Investor 2011



Source: MicroRate (ed.), 2012, 11.

The financiers of MIVs can be classified into public and private investors (private institutions[23] and private individuals (retail customers or HNWIs)) (Goodman, 2007, 24). In

[22] Possible examples of information problems are adverse selection or moral hazard. Group lending techniques try to overcome problems of adverse selection by using local information networks to receive information on borrowers (see Ghatak, Guinnane, 1999, 201 and Morduch, 1999, 1580). Issues related to moral hazard are addressed within joint-liability techniques through peer monitoring.

[23] Such as pension funds, insurance companies or other large-scale companies.

2011, private institutional investors represented the largest share (42%) according to the amount invested, followed by public investors. (29%) Nevertheless, the fraction of private retail investors in microfinance (12%) is larger than with respect to other SRI instruments (as seen in Chapter 2.3). Not-for-profit investors are reported in the survey conducted by MicroRate in 2012 with a share of 3% and fund of funds with 8% (see Figure 3.3).

Incentives for investing in microfinance include the following (among others):

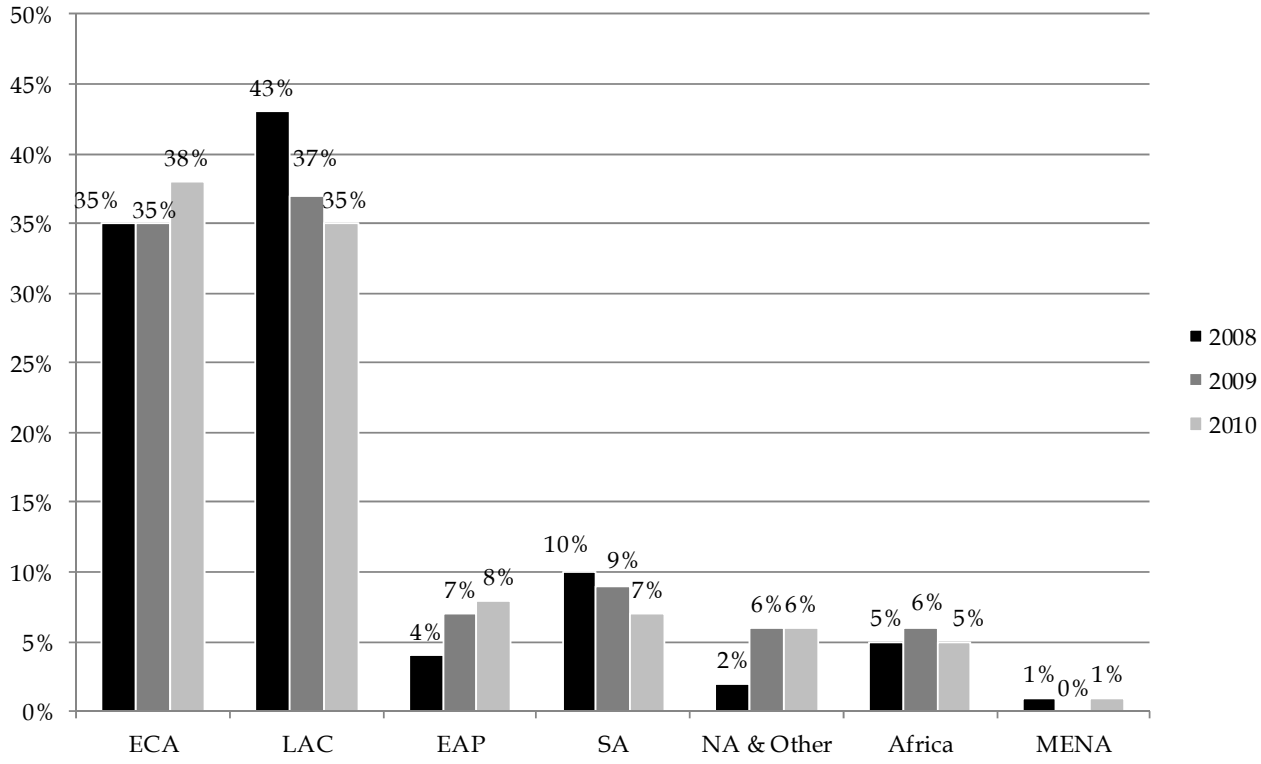
- higher and / or more stable financial returns
- diversification within existing portfolios
- double bottom line: financial and social return (De Sousa-Shields, 2007, 91).

Several papers analyse the possible diversification effect of adding microfinance to an existing portfolio and find supporting evidence (Dreher et al., 2010, 52; Janda / Svárovská, 2009, 1; Galema et al., 2011, 514; Krauss / Walter, 2008, 24; Oehri / Schäfer, 2011, 97 ff.). Oehri and Schäfer show that adding a microfinance investment fund (Dexia Micro-Credit Fund) to an existing portfolio by substituting it for stock- and money market instruments can increase portfolio returns. Furthermore, including an MFIF could result in risk reduction for the overall portfolio (Oehri / Schäfer, 2011, 104 ff.). Diversification effects of microfinance directly relate to the characteristics of alternative asset classes. Other alternative asset classes (e.g. private equity or real estate) are also interesting in terms of diversification (Ibbotson (ed.), 2007, 5; Fugazza et al., 2009, 23).

The different incentives reflect the diverse types of investors. For example, institutional investors typically use microfinance for diversification effects, as part of a bigger portfolio. Another incentive for institutions is their concern to demonstrate social responsibility in order to gain visibility among potential customers or to fulfil the requirements of existing stakeholders (Goodman, 2007, 24). On the other hand, private individuals might invest in microfinance either for financial returns or to some extent as a socially conscious activity. As presented in Chapter 9, MFIFs can deliver considerable financial returns, attracting commercial investors as well. This means that a microfinance investor is not per se a social or responsible investor. A responsible microfinance investor is motivated by the intention of contributing to the financial sustainability and capital

accumulation of the end clients rather than by personal financial gains (Symbiotics (ed.), 2012a, 31).

Figure 3.4 Geographical Distribution of Microfinance Assets 2008-2010



Source: MicroRate (ed.), 2011, 7; MicroRate (ed.), 2010, 20.

Microfinance assets are distributed globally across the following seven regions: Latin America and the Caribbean, Africa, Eastern Europe and Central Asia, Middle East and North Africa, South Asia, East Asia and the Pacific, Northern America and Others (see Figure 3.4). In the years 2008 to 2010, Eastern Europe and Central Asia and Latin America and the Caribbean accounted for the receipt of the majority of microfinance investments (38% for ECA in 2010 and 35% for LAC in 2010). The proportion of investments in South Asia declined in the years 2009 and 2010 while the proportion of investments in East Asia and the Pacific increased in 2010. Middle East and North Africa's share has been growing marginally, while remaining the smallest recipient of all microfinance assets (1% in 2010). Africa's share grew during 2009 and slowed again in 2010. North America and Others is not always specified as a microfinance region and has a rather small stake of the total market with around 6%.

3.3 SOCIAL IMPACT OF MICROFINANCE

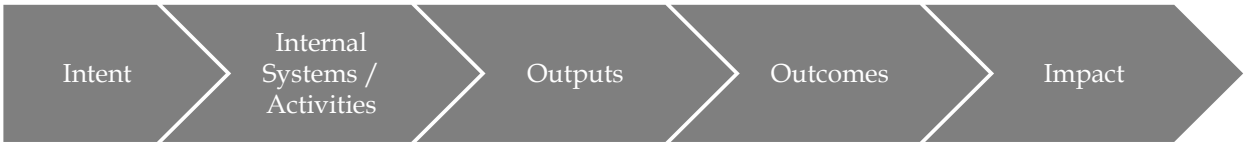
With respect to the social performance of microfinance, several aspects can be distinguished (see Figure 3.5).[24] The first two dimensions address the institution in its intent and mission whereas the three subsequent criteria put the focus on the clients. With respect to the microfinance institution, its intent, mission and goals and the quality of the internal systems and activities are evaluated (e.g. range of products, market research on clients). Several institutions (e.g. social performance task force (SPTF), CERISE, M-CRIL and others) have tried to evaluate the social mission of MFIs and MIVs qualitatively. The definition of social performance used by the SPTF is the following: "*the effective translation of an institution's mission into practice in line with accepted social values*".[25] However, while such assessments of social performance capture its nature in detail, they are difficult and time consuming to assess. In collaboration with MIX, SPTF developed a standardised set of 11 performance indicators in order to achieve comparable results among MFIs (MIX Online, 7.05.2012). The indicators include mission and social goals, governance, range of products and services among others.

As a next step, direct outputs are part of the social return. The direct output of microfinance activities is measured as outreach in terms of region and type of clients reached and lending methodology. The question of the outcome of microfinance then goes one step further in asking whether microfinance clients experience social and economic improvements. In addition to effects on a personal or institutional level, economic development of whole regions is another outcome often associated with microfinance (Robinson, 2001, 264). In particular, the possibility of savings at local levels might deepen financial markets and increase domestic savings. This allows higher gross domestic investments, eventually fostering economic growth.

[24] If applying this definition according to concrete dimensions, social return in microfinance can clearly be differentiated from social return on investment often discussed in the field of SRI. Social return components in SRI are more varied and different aspects of social return can have different relationships with and impact on financial factors. Therefore, in some research social return in SRI is modelled stochastically, as it is difficult to measure and might change over time (see Dupré et al., 2004). Therefore, in Chapter 4, microfinance is discussed separately from SRI investments when it comes to the interaction between financial and social return.

[25] http://sptf.info/how-do-i-start/faqs#1.

Figure 3.5 Social Performance Pathway (SPTF)



Source: SPTF, 2009; Sinha, 2006.

Addressing the causal relationship between microfinance and social or economic improvements (if any) leads to the question of impact. To date the social impact of microfinance has not been proven. Several institutions, banks, funds and researchers claim that microfinance might help to reduce poverty and improve the living standards of households and whole villages (Morduch, 1999, 1569; CGAP (ed.), 2005; Khandker, 2005, 285 for Bangladesh; Islam, 2009). Nevertheless, a direct causal relationship is difficult to demonstrate in impact studies (Armendáriz / Morduch, 2010, 5; Duvendack et al., 2011, 27).[26]

Funds in particular present quantitative measures in their social performance reports, mostly focusing on the output of microfinance. These include figures such as the percentage of female clients, the total number of clients served or average loan sizes, with a combination of the measures describing so-called outreach to the poor.[27]

In general, two dimensions of outreach to the poor are differentiated: depth and breadth or width of outreach. Whilst depth of outreach indicates the extent to which service is provided to the poorest of the poor, breadth describes the number and variety of clients (Conning, 1999, 52; Schreiner, 2002, 595). Assessing outreach by means of the number of entrepreneurs served and the mean size of loans distributed is based on the premise that the more clients reached and the smaller the amounts of credit given, the higher the social contribution of a MFI because it requires greater effort and results in less profit (Cull et al., 2007, F131). While depth of outreach is clearly a measure of social responsibility, breadth of outreach arguably is not. Although it may be argued that serving a larger number of clients is more socially responsible, the counter argument is that a larger number of clients could be an indication of targeting the better-off poor in order to reach economies of scale by serving more clients (Li, 2010, 47). Still,

[26] Impact studies try to measure the effect of microfinance directly in the markets by using various qualitative or quantitative approaches or (non-) randomised trials.

[27] For more details and an example refer to Chapter 6.2.

institutions with wide breadth might target as many poor clients as institutions with high levels in depth of outreach, simply because they serve a large number of clients, and a fraction of them are very poor (Schreiner, 2002, 596).

The proportion of female and rural clients is often used as a simple measure of depth of outreach as it is assumed that they are likely to be poorer. Furthermore, the average size of the loans is used as a measure of the depth of outreach.[28] Average loan size is difficult to use as a standardised measure because of its dependence on the economic situation of a particular region. A better, standardised measure is the average loan balance per borrower in relation to the average Gross National Income (GNI) per capita, but only few funds publish this indicator and its calculation is rather complex, particularly for funds that place investments in many different MFIs and countries.

Nevertheless, for empirical performance analyses, quantitative figures are necessary and to date, no other, more efficient approach exists. Therefore, most research studies focus on outreach-numbers when referring to social performance of microfinance.

[28] Other proxies would be ethnicity, housing, access to public services (Schreiner, 2002, 594).

3.4 CURRENT DEVELOPMENTS IN MICROFINANCE

3.4.1 COMMERCIALISATION OF THE MICROFINANCE INDUSTRY

In 2007 the microfinance investment sector experienced a boom. Despite growing interest, experts assumed a significant demand surplus as, according to statistics, only 3-5% of capital needs were expected to be served by respective funds, representing a funding gap of approximately USD 250 billion (Dieckmann, 2007, 1; Oehri / Fausch, 2008, 1).[29] Optimistic expectations and prospects for future growth of the microfinance market resulted in the so-called "commercialisation of the sector" (Sriram, 2010; Cull et al., 2009) or "mission drift" of microfinance institutions (Mersland / Strom, 2010). Mission drift is said to occur when MFIs increase the average loan sizes provided and therefore reach out to a wealthier segment of clients (Armendáriz / Szafarz 2009, 2). In recent years, some players entered the market with the single goal of financial gain while ignoring social aspects. Certain so-called "new-wave" MFIs abandoned the guidelines of funders and sought maximum profits for managers or stakeholders (Bateman / Chang, 2009, 22). The discussion intensified when some MFIs went public, such as SKS in 2010 and Compartamos in 2007, realising huge profits for investors while charging annual interest rates amounting to 86% on the average loan portfolio (Sriram, 2010, 67; Rosenberg, 2007, 3). One way to assess whether mission drift is taking place is to analyse the development of the size of loans distributed, as an increase would indicate mission drift (lower outreach to the poor) (Mersland / Strom, 2010, 29). However, several papers find no evidence of mission drift among MFIs (e.g. Mersland / Strom, 2010, 35).

The comparatively high interest rates charged by MFIs are regularly criticised (Sriram, 2010; responsAbility (ed.), 2008b, 1). The annual compound interest rates vary according to regions and types of the institutions and micro-credits usually have short maturities, not even amounting to one year (Symbiotics (ed.), 2012a, 30).

[29] However, the calculation of these market penetration rates can be criticised (for more information on penetration rates, see Krauss et al., 2012).

Figure 3.6 Microfinance Interest Rates[30]

<table>
<tr><th>Debtor</th><th colspan="2">Microfinance Institution</th><th colspan="2">Microfinance Investment Fund</th></tr>
<tr><td rowspan="8">Interest Rate</td><td rowspan="3">Provisions</td><td>Default Risk</td><td rowspan="5">Interest Rate</td><td>Defaults</td></tr>
<tr><td>Country Risk</td><td>Operating Costs</td></tr>
<tr><td>FX Risk</td><td rowspan="2">Transaction Fees</td></tr>
<tr><td rowspan="2">Refinancing Costs</td><td>Local Capital Markets</td></tr>
<tr><td>MFIF Loans</td><td>Profit</td></tr>
<tr><td colspan="2" rowspan="3">Operating Costs</td><td colspan="2"></td></tr>
<tr><td colspan="2"></td></tr>
<tr><td colspan="2"></td></tr>
<tr><td></td><td>Other Costs</td><td colspan="2"></td></tr>
<tr><td></td><td>Profit</td><td colspan="2"></td></tr>
</table>

Source: own research, based on Becker, 2010, 63.

Interest rates charged by MFIs are all based on their cost structures. Operating costs are high due to the large effort required per borrower for small amounts of credit (see Figure 3.6). Customers usually live in a widespread area around the region of a particular MFI and credit officers like to visit their clients regularly. Apart from operating costs, MFIs build provisions to offset risks such as the potential default of clients or currency. A further main cost factor is refinancing, either through funds or local capital markets. In 2010, MFIs paid average interest rates of around 8.6% to their funders, although the figure varies greatly between different types of funders. Evidence shows that in 2010 the average interest rates charged by funds (9.90%) and financial institutions (9.71%) were higher than the rates charged by development financial institutions (8.17%) and more especially by governments (6.02%).[31] Based on these facts, MFIs lending money from MFIFs clearly face difficulties in being profitable[32], and in many cases a reduction in the interest rates charged to customers is not possible without risking default or re-

[30] FX risk stands for foreign exchange (FX) risk.
[31] Own analysis using 1,536 MFIs (data from MIX). The difference between the funders is significant based on a One-way Anova analysis.
[32] For more details on MFIF's profitability refer to Chapter 8.

quiring subsidies (Morduch, 1999, 1571). In fact, most MFIs charge high interest rates to cover their costs rather than to realise profits. Many MFIs would not be able to continue their business without donations made by social institutions interested in microfinance (Hudon / Traca, 2011, 967). However, development finance should be withdrawn as soon as a MFI is commercially viable and sustainable enough to be financed by MIVs (Brugger, 2004, 17). Levels of subsidisation higher than a certain threshold have been found to have a negative marginal effect on MFI's efficiency (Hudon / Traca, 2011, 971).

In recent years, MFIs have shown increased motivation to achieve financial sustainability. On the one hand, donors and investors have greater interest in self-sufficient institutions and on the other hand, MFIs aim to survive independently of external subsidies. Traditionally, commercially orientated asset managers outperform socially focused funds in terms of absolute portfolio size and portfolio growth (Kirchstein / Welvers, 2010, 7). As a result, even non-profit organisations begin to indicate financial performance as one of their main goals (Quayes, 2011, 3424).

A decline in interest rates charged by both MFIs and MFIFs may, however, occur in the future. The recent trend towards increased competition has led to a "squeezing of the margins" (Di Bella, 2011, 15) as many suppliers have offered services in rather saturated markets as for example in Ecuador or Mexico (CSFI (ed.), 2011, 24). A decline in interest rates was already observed in Bolivia in 2006 as a result of increased competition (Rhyne / Otero, 2006, 16).

3.4.2 CRISIS HITTING THE MICROFINANCE INDUSTRY

Following a phase of optimism in 2007, rising food prices in late 2007 and 2008 led to adjustments of growth assumptions. Worldwide food prices increased dramatically during this time[33], which in turn resulted in lower repayment rates by end-customers (Reille et al., 2009, 2). Many microfinance customers were affected by rising food prices, not only as customers but also as entrepreneurs, eventually leading to an effect on the microfinance industry. Beginning in 2008, the global financial crisis also influenced the

[33] In Bosnia & Herzegovina the average annual growth rate of the consumer price index was 3.3% for the years 2000 until 2010, in Bolivia 5.4%, in Nicaragua more than 8.8% and in some African countries as Congo and Angola even 27% and 37% (The World Bank (ed.), 2012, 274 ff.).

microfinance sector. Not only had food prices risen, but the global economy was also suffering, which resulted in a slowdown in consumption and a reduction in remittance flows into developing countries in the years 2008 and 2009 (Ratha et al., 2008, 7). Moreover, in some countries such as Bolivia, Nicaragua, Bangladesh and Bosnia & Herzegovina (BiH), increased competition led to additional challenges (Rhyne / Otero, 2006, 15). Local lenders have begun to contest the money market by offering competitive rates on local currency loans (MicroRate (ed.), 2011, 11). According to the Banana Skins report 2011, "competition" is one of the biggest risks perceived by MFIs. It is the fastest increasing risk factor from the MFIs' perspective, climbing from ninth place in 2009 to third in 2011 (CSFI (ed.), 2011, 6). In the future, increasing competition could lead to a consolidation of the market through strategic alliances and mergers or acquisitions (Kirchstein / Welvers, 2010, 36).

Directly related to increased competition, MFIs are finding it harder to access funding by both local and international investors. Moreover, the demand for loans declined in some countries, resulting in slower or negative growth of portfolios as the gross loan portfolio of MFIs reporting to the MIX shrank between 2008 and 2010 by more than 40% (own analysis using MIX data).

Furthermore, the level of indebtedness of clients is an often-discussed topic, as in some markets particular customers exhibit more than one loan, including examples of up to five loans at the same time in Bosnia & Herzegovina (Maurer / Pytkowska, 2010, 2). This causes deterioration in the quality of existing portfolios because higher portfolio at risk (PAR) indicators are registered mostly due to cross-indebtedness of clients (Reille et al., 2009, 3). The weakening of repayment stability is partly caused by the intensified competition leading to cross-indebtedness; by a decline in lending discipline by several MFI's; and furthermore, by local events influencing several regions (Kappel et al., 2011, 10 ff.). The changing lending behaviour of certain MFIs as well as the expansion of their product offerings seem to be reasonable motives (Chen et al., 2010, 10), as besides group lending, intensive monitoring of clients used to be an important reason for the success of microfinance and high repayment rates (Ghatak / Guinnane, 1999, 196). Due to repayment insecurities, credit risk is the biggest risk for MFIs according to the Banana Skins survey 2011 (CSFI (ed.), 2011, 6). Related to these repayment difficulties, in

certain regions centralized credit bureaus and debt advisor institutions were created to monitor the activities of all financial institutions involved in loan distribution (e.g. Debt Advice Centre and Credit Registry in Bosnia & Herzegovina).

On top of these negative developments, the recent country-specific events in several regions such as Bosnia & Herzegovina, India and Nicaragua and especially the related media coverage[34] has led to a distortion of the public's perception of the microfinance sector (MicroRate (ed.), 2011, 4; Symbiotics (ed.), 2011, 17). As an example, some 80 suicides in Andhra Pradesh (India) have been linked to microfinance borrowings and the coercive recovery practices of the institutions (BBC News Online, 12.09.2011).

Recent developments have led to increased awareness in the industry about problems and potential for optimisation. In particular, the need for improved transparency when assessing the social and financial performance of investments in microfinance has been re-emphasised. Moreover, the microfinance sector needs tools to prove and justify its social mission (Urgeghe, 2012, 6). The topic is still of global interest on which more and more educational institutions, investment advisors and researchers are focussing.

[34] See for example Jacquemart, 2011, 35.

PART II THEORETICAL BACKGROUND

4. ASSET ALLOCATION FOR SOCIALLY RESPONSIBLE INVESTMENTS

4.1 TYPES OF ASSET CLASSES

Asset classes group securities with similar return-, risk- and liquidity-profiles (Greer, 1997, 86). Traditionally, three basic asset classes are defined (see Table 4.1) with cash and fixed-income usually determined as the asset classes with the least risk (Spremann, 2008, 5). However, this definition is challenged by recent developments regarding sovereign bonds. In particular, the downgrading of several countries' credit ratings has changed the perception of risk-free fixed-income investments as the risk attached to government bonds has increased.

Table 4.1 Traditional Types of Asset Class

Type	Description
Cash	Currency and Coins on Hand
Fixed-Income	Bond Issues, Money Market Instruments
Stocks	Variations on Stock Exchange, Value of a Stock Depends on Future Expectations and Economic Environment

Source: own research based on Spremann, 2008, 5; Skidmore, 2010, 1.

Besides the traditional asset classes, alternative asset classes are separated. Meanwhile, the definition of alternative assets is ambiguous and may include for example, all asset classes that are not "long-only" stocks and bonds, as well as investments following novel strategies and investments in special regions (Skidmore, 2010, 1; DWS (ed.), 2011, 2). Alternative assets include hedge funds, private equity, natural resources and commodities, investments in emerging global markets and real estate (Skidmore, 2010, 1). DWS Investments distinguishes three categories of alternative investments according to the following objectives:

- provision of absolute return, independent of the broader stock market
- provision of real return as a protection against rising inflation
- provision of non-traditional return.

From an investors' point of view, alternative assets are especially interesting as components of portfolios due to their potential diversification effects. Starting a few years

ago, the demand for alternative assets has continued to increase, especially among institutional investors (Busack / Kaiser, 2006, 5).

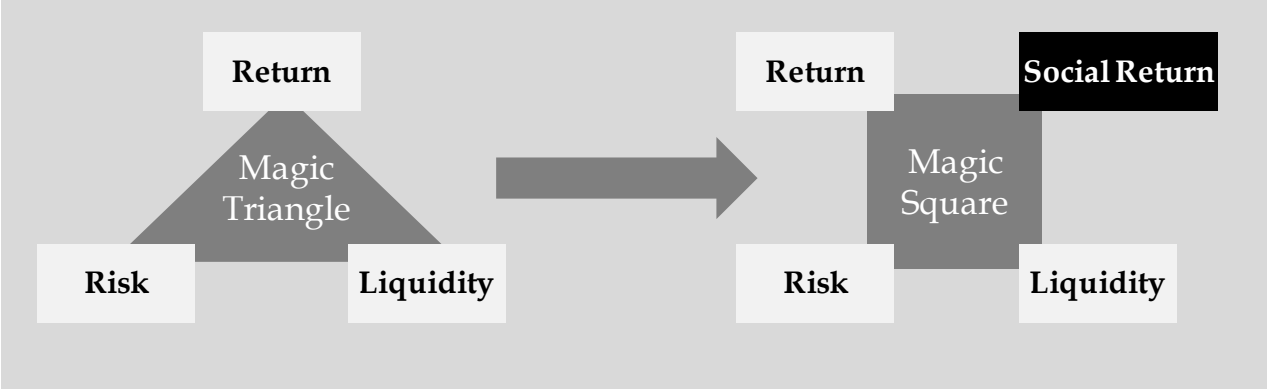
Microfinance belongs to the definition of alternative asset classes (Ernst, 2010, 6) as it provides non-traditional returns, largely independent of the broader stock market. However, to date microfinance may not meet all the criteria for being classified as an independent asset class, even though it shows weak correlation with major as well as emerging market equity and bond indexes and domestic GDP (Dreher et al., 2010, 52; Janda / Svárovská, 2009, 1; Galema et al., 2011, 514; Krauss / Walter, 2008, 24; Oehri / Schäfer, 2011, 97 ff.). Another requirement for meeting the definition "distinctive asset class" is the availability of a secondary market to assure liquidity. Microfinance instruments come close because of the homogeneity (Krauss / Walter, 2006, 18); however, illiquidity is an issue because of long lock-in periods defined by funds and the lack of a secondary market (Symbiotics (ed.), 2011, 14).

4.2 *MAGIC SQUARE SOCIALLY RESPONSIBLE INVESTMENTS*

Asset allocation involves deciding on the weighting of different components and leads to the value-related mixture of the portfolio. Asset allocation processes that focus on particular securities are defined as bottom-up while top-down stands for the choice of some specific asset classes, from which securities are selected in a second step (Spremann, 2008, 17). After a portfolio is configured, constant management is required, including monitoring and occasional modification of the asset composition to ensure constant efficiency of the portfolio. The availability of meaningful input parameters is important when choosing particular securities for investments. Relevant factors are only available on an historic basis, which complicates the valuation and evaluation of the securities. Past data are used to calculate future expected values and, especially when it comes to the evaluation of young asset classes, analysts face difficulties due to the short history. For alternative investment classes, e.g. microfinance, problems are even more severe, as funds are not publicly listed and prices are not officially quoted or transparent (i.e. no mark-to-market values reflecting current fair market prices available) (Sharpe, 1995, 986).

One of the reasons investors choose an investment in SRI is the opportunity to achieve social return. Aside from adequate liquidity, traditional portfolio allocation involves the optimal balance between risk and return (see Chapter 4.3, Elton, 2011, 100) (The magic triangle of return, risk and liquidity (Becker, 2010, 5)). When it comes to SRI, social return is an additional factor in the decision process, resulting in a magic square (see Figure 4.1) (Kirchstein / Welvers, 2010, 20).

Figure 4.1 Incentives to Invest in SRI



Source: own research, based on Spremann, 2008, 2 ff.; Becker, 2010.

As a proxy for social return, the so-called ESG-criteria are often taken into account as outlined in Chapter 2.1.[35] The construction of a specific SRI portfolio involves four steps starting with the whole investment universe based on a top-down approach (see Figure 4.2). Steps 2 and 3 can be exchanged in that the investment universe might be filtered by ESG-criteria first or, alternatively, investors might first evaluate the profitability of funds using financial analysis and apply tests on sustainability factors later. After financial and social screening, portfolio construction follows. The final portfolio must then be monitored regularly to ensure optimal performance.

Figure 4.2 Asset Allocation Process for SRI

Source: own research, based on CSSP AG (www.cssp-ag.com).

[35] For Microfinance, the "S"-component within ESG is particularly fundamental. Governance issues are gaining importance (e.g. Lapenu / Pierret, 2006).

4.3 FINANCIAL VERSUS SOCIAL PERFORMANCE SRI

4.3.1 THEORETICAL BACKGROUND

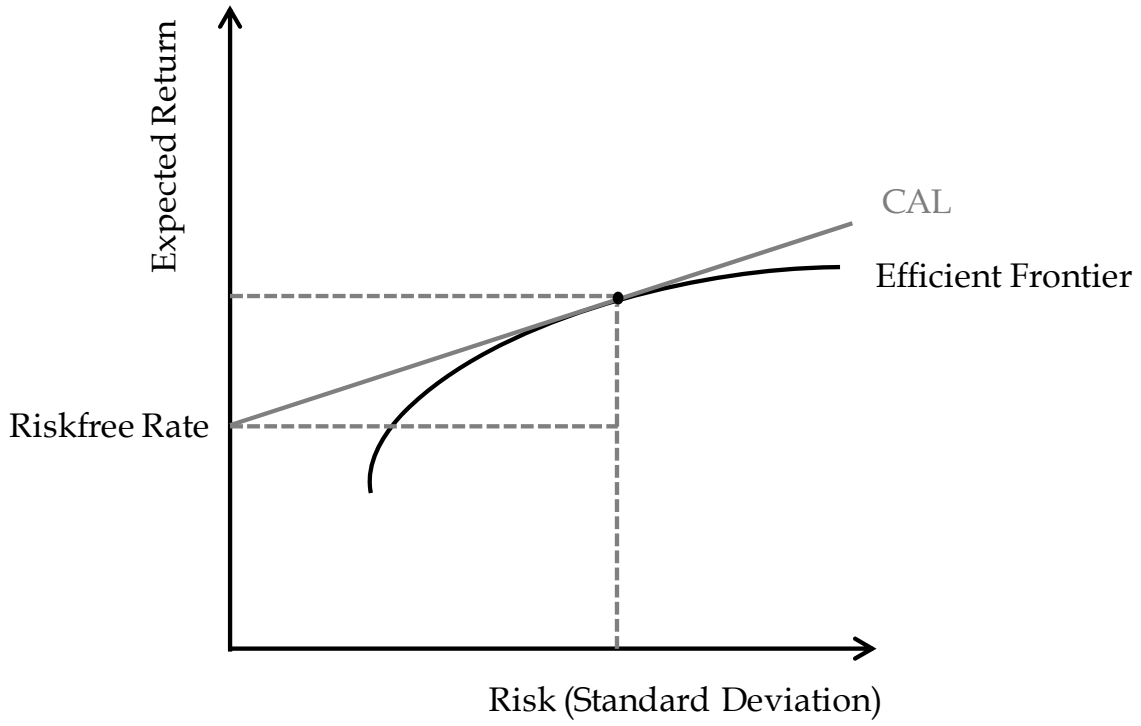
Comparison of the returns of SRI funds and traditional funds is an important and frequently discussed topic. Many investors continue to assume that investing in SRI leads to a lower return than investing in traditional assets does. In order to elaborate the relationship between social and financial performance of SRI, a few theoretical considerations are discussed here.

As in standard economics, modern portfolio theory assumes that investors are rational and self-interested, known as "homo economicus". This would mean that investors are not interested in SRI unless a positive connection between social and financial performance is proven. However, evidence of growth in the SRI market shows that investors are willing to invest part of their money in SRI funds even if social return is difficult to measure and in some cases not directly linked to financial performance. Also theoretical models offer contradicting views on whether the inclusion of parameters, such as for example environmental or social aspects, correlates positively or negatively with financial return.

According to the *modern portfolio theory*, including sustainability constraints when selecting a portfolio results in limited efficiency. The theory, based on the work of Harry M. Markowitz in 1952, is predicated on the premise that investors managing portfolios should take account of the risks and returns when choosing investments. For a given amount of risk, an investor aims to find the portfolio leading to the highest available return. Alternatively, for a given level of return, the aim is to select a combination of assets that results in the lowest quantity of risk. The optimal investment portfolio consists of a mixture of the market portfolio and the risk-free asset. This relationship between risk and return is described by the efficient frontier (see Figure 4.3), which connects the asset of minimum variance to the asset with maximum return. The quadratic function describing the efficient frontier represents the investors' aversion to risk (Bodie et al., 2008, 205). The so-called capital allocation line (CAL) combines the different return possibilities with their associated risks (Sharpe et al., 1995, 244). The combination of the risky asset with the risk-free asset within a portfolio leads to higher returns. For the risk-free asset (intercept), the risk (standard deviation) is zero. For higher ex-

pected returns, risk increases as well. To find the optimal risky portfolio for a particular investor, the tangent of the CAL with respect to the efficient frontier is decisive (Elton et al., 2011, 99 ff.).

Figure 4.3 Efficient Frontier and Capital Allocation Line



Source: Elton et al., 2011, 100.

If sustainability factors are taken into account, the market portfolio is restricted, resulting in a suboptimal diversification of the investor's portfolio (Dupré et al., 2004). Adding constraints leads to less efficient portfolios under the assumptions of the modern portfolio theory (Elton et al., 2011, 106 ff.; Staub-Bisang, 2011, 72; Wittwer, 2011, 37). Thus, SRI constraints result in a displacement of the efficient frontier to the southeast of the diagram due to the reduced diversification possibilities (Drut, 2010, 143; Brière / Szafarz, 2011, 18ff.) The amount of the dislocation depends on the intensity of the constraints and the efficiency of the final portfolio is subject to the investors' risk tolerance (Brière / Szafarz, 2011, 20). The modern portfolio theory assumes that all firms or funds are homogenous in all but their risk premium and investors are rewarded only for bearing systematic risk. Therefore, accounting for SRI constraints is assumed to have a negative impact on financial performance (Barnett / Salomon, 2006, 31).

Several researchers find single-index models (only focusing on risk and return) insufficient, as other factors might cause stocks to move together. Therefore, approaches of *Multi-Factor Models* were elaborated controlling for diverse additional aspects (Elton et al., 2011, 160 ff.; Sharpe et al., 1995, 294). The aim of the models is to explain all the factors that jointly influence different securities in order to find the remaining unexplained fraction of the return of an individual security (Sharpe et al., 1995, 294). The factors included can be based on characteristics explaining the securities or on other elements, such as the macroeconomic environment (Sharpe, 1995, 295; Elton / Gruber, 2011, 19).

A model often used in analyses related to the performance of SRI investments is the Multi-Factor Model introduced by Carhart (1997) which expands the Capital Asset Pricing Model (CAPM) by three factors controlling for size, book-to-market and one year momentum in stock returns. The first two factors are adopted from Fama and French (1993) and the third factor is calculated by subtracting the equal-weighted average return of companies with the lowest 30 percentage eleven-month returns (lagged one month) from the equal-weighted average returns of companies with the highest 30 percentage eleven-month returns (lagged one month) (Carhart, 1997, 61). The inclusion of these additional factors allows the explanation of most of the spread and patterns of portfolios (63). In particular size seems to be an important factor to control for when assessing performance, as according to Mollet & Ziegler (2012), the average market values of SRI companies are larger than the average market values of less sustainable firms (19). Nevertheless, multi-factor models are criticised because of the historic focus that does not necessarily hold for future development (Elton et al., 2003, 165). Most papers analysing investments in SRI combine single and multi-factor models for the comparison of return measures.

According to the *stakeholder theory* on the other hand, the success of a company is significantly affected by its sustainable attitude. Freeman and Reed (1983) consider that a company is not only responsible to stockholders, but also to further groups, namely the other stakeholders. Therefore, decisions made by companies, such as for example the implementation of certain policies, should be made including consideration of how the relationship with stakeholders would be affected (Freeman / Reed, 1983, 93). These

considerations can lead to more efficiency; as for example, fair treatment of employees could result in lower human resources costs and lead to higher profitability. Moreover, environmentally friendly actions might benefit the share price by preventing confrontation with NGOs (Wittwer, 2011, 37; Freeman / Werhane, 1999, 8). This theory leads to the assumption that portfolios including SRI will result in higher returns and growth (Ruf et al., 2001, 150).

4.3.2 CONTRADICTORY EVIDENCE

The selection of SRI investments is based on factors beyond the traditional long- and short-term financial goals. Even though the interaction between social and financial return is often discussed, few studies have investigated the empirical relationship, and the existing studies have come to contradictory results. Most papers so far analyse common stock mutual funds or equity investments rather than fixed-income securities (Derwall / Koedijk, 2009, 211). Recently, researchers started to focus on fixed-income investments and on the relationship between corporate social responsibility and the cost of bank debt (e.g. Goss / Roberts, 2011).

Existing papers addressing the interdependence between social and financial factors in SRI use diverse approaches. As funds, indexes or stocks are compared, it is not only the analysed units that differ, the applied performance measurement techniques also diverge.

Geczy et al. (2005) construct optimal SRI-portfolios using mutual funds and compare them to portfolios that include a broader investment universe. They analyse the differences between the portfolios based on diverse (theoretically modelled) expectations regarding pricing models and management skills of investors. They find that investors who rely on individual funds' track records to predict future performance experience higher costs with the SRI constraint than do other investors (e.g. investors who believe strictly in the CAPM and not in the importance of management skills). Furthermore, they ascertain that the fraction of the portfolio allocated to SRI funds is important, stating that the cost of the SRI constraint is especially high for investors who allocate their entire portfolio to socially responsible mutual funds. The SRI constraint (or the cost of SRI) is measured using the certainty-equivalent loss of the investor, meaning the differ-

ence between the expected return when funds can be chosen from the broad universe and the return if selecting among SRI funds (Geczy et al., 2005, 9 ff.).

Bauer et al. (2005) analyse the differences in risk and return between ethical mutual funds and a matched sample of standard mutual funds by calculating equally weighted portfolios. Applying a CAPM as well as a Carhart Multi-Factor Model and controlling for investment style, they find no significant difference in returns (Bauer et al., 2005, 1763). In a second step, they focus on indexes and show that in their analysis ethical equity indexes are not able to explain ethical mutual fund performance, and standard indexes even appear to better capture the performance of ethical funds (Bauer et al., 2005, 1765)[36].

Statman (2006) compares the performance of the Domini 400 Social (DS 400) Index to the S&P 500 by analysing the 12-month moving average of the difference between monthly returns. The author finds Jensen's alpha[37] to be higher for the DS 400 index, although not at a significant level. He finds a very high correlation between the monthly performances of the two indexes (0.983), nevertheless, during many periods of substantial differences between the returns. The hypothesis that returns of socially responsible companies are equal to those of conventional companies can therefore not be rejected based on his data (Statman, 2006, 108).

Galema et al. (2008) use market-to-book values as well as alphas (excess returns) to relate US portfolio returns to different aspects of socially responsible performance. They find a negative impact of SRI on market-to-book values and alphas, supporting the theory of differences in demand between SRI and non-SRI stock. They create twelve SRI portfolios based on six SRI dimensions and calculate monthly excess returns using an adjusted version of the Fama & French three-factor model (1993). They find a significant impact on stock returns caused by lower market-to-book ratios for some categories of SRI.

Lee et al. (2010) investigate the relationship between screening intensity and performance of SRI funds. Their focus is on abnormal returns (alphas) measured using Jensen

[36] Based on this result the authors conclude that using conventional indexes for the calculation of their ethical mutual fund variation leads to more meaningful results than using ethical indexes (1765).

[37] See more on Jensen's alpha in Chapter 6.1.2 (Table 6.2).

and Carhart models. The authors consider both return and risk as performance indicators. Regarding unadjusted return, no effect of screening intensity is found, when using the Carhart model for (risk adjusted) performance calculation. Instead, a decrease in return is observed. Regarding systematic risk (standard deviation of the performance), the authors find a curvilinear relationship to screening intensity (meaning that risk first decreases with screening intensity and then starts to increase). Nevertheless, Lee et al. recommend investors to choose SRI funds that do not screen too intensively.

Weber et al. (2011) analyse 151 mutual funds that are self-classified as sustainable, environmental, ethical or social and which provide monthly performance data between 2001 and 2009. They find a significantly higher return for the SRI-fund portfolio compared to the MSCI World Index. Moreover, they find a high correlation between the SRI-fund portfolio and the MSCI World Index during periods of economic turmoil.

While all of the above mentioned papers focus on equity mutual funds, *Derwall / Koedijk (2009)* analyse fixed-income (F/I) funds. The authors use a sample of bond and balanced (debt/equity) mutual funds labelled as socially responsible by the US Social Investment Forum (SIF) and evaluate their performance relative to matched samples of conventional fixed-income funds. A four-factor model is applied to estimate fixed-income fund performance. Evidence is found that socially responsible fixed-income funds show a steady performance between 1987 and 2003. They conclude that a portfolio of SRI bond funds earns benchmark-adjusted returns similar to the conventional portfolio. Within the direct comparison of the SRI portfolio with the conventional portfolio, the authors find a significant outperformance by the SRI funds of 1.3% per year.

Table 4.2 Overview Research on SRI

Author(s) and Year	Focus	Result
Geczy et al. (2005)	Funds	Depending on investor's expectations
Bauer et al. (2005)	Funds / Index	No significant difference in return
Statman (2006)	Index	High correlation between indexes
Galema et al. (2008)	Stocks	Impact on stock returns by lowering market to book ratio, not by generating positive alphas
Lee et al. (2010)	Funds	Curvilinear relationship
Weber et al. (2011)	Funds	Higher return for SRI portfolios
Derwall / Koedijk (2009)	F/I Funds	Similar risk-adjusted performance

Source: own research.

4.3.3 POSSIBLE EXPLANATIONS

Research results on the impact of the consideration of social responsibility aspects on fund, index and stock level performance are not consistent (see Table 4.2). For analyses on the fund level, intensity of screening seems to be important. Nevertheless, when comparing actively managed funds it is important to keep in mind that it is difficult to disentangle the ability of the fund manager from the SRI impact on financial performance (Mollet / Ziegler, 2012, 3).

A study by *Mercer (2009)* provides an overview of the results of academic research on financial and social return. They analyse sixteen studies in 2009 and find ten that show evidence of a positive connection between ESG factors and financial performance. Two analyses find a negative-neutral link and four others identify a negative link.

The *Globalance Bank (2012)* also published a study analysing 76 studies on double bottom line returns. They find that in total 90% of the studies provide evidence of either outperformance or at least a market return from SRI investments. The authors then divide the papers according to the analysed unit as they find positive results for analyses focusing on companies, but on the portfolio level only 19% of the studies show an outperformance of SRI. The return of a portfolio very much depends on the portfolio construction and management. Therefore, the authors conclude that it is important to assess portfolio management in detail.

Galema et al. (2008) propose a possible explanation for the described puzzle in arguing that different aspects of SRI have specific effects on financial performance. The diverse directions of the effects could eliminate individual influences when analysing the impact of SRI in an aggregate form. However, in their own study they find little evidence for this hypothesis (Galema et al., 2008, 2653). They also find that SRI comes at lower book-to-market ratios. Because most studies focus on alphas (excess return) when analysing the impact of SRI on financial performance, it is possible that they do not find a relationship because alpha is influenced controversially. When measuring alphas while controlling for risk using the Fama & French models that include an HML factor[38], alphas cannot capture SRI effects due to lower book-to-market ratios induced by SRI also influencing alpha (Galema et al., 2008, 2653). This means that if SRI leads at the same time to lower book-to-market ratios (lowering alpha using the Fama & French model for the calculation of systematic risk) and to higher return (augmenting excess return / alpha), the total effect on alpha is (partly) erased. Therefore, parts of the potential trade-off between SRI and traditional investments are captured by the empirical measure of systematic risk (Galema et al., 2008, 2646).

Dam (2008) shows the importance of analysing and discussing different financial performance measures separately when testing the influence of social responsibility. He considers the effect of social factors on market-to-book ratios, return on assets (ROA) and stock market returns separately and finds clear associations between financial return and social responsibility. Dam finds positive effects on market-to-book ratios and ROA, but ambiguous relationships with stock market returns at the aggregate level and a negative effect at the industry level.

Statman/Glushkov (2008) analyse the return of stocks of companies based on their score regarding social responsibility using a database by KLD Research and Analysis Inc. They find that socially responsible portfolios outperform conventional portfolios by using three different models (CAPM, three-factor and four-factor model). Interestingly, at the same time they find companies associated with tobacco, alcohol, gambling, firearms, military or nuclear operations to outperform conventional and SRI companies.

[38] HML: High minus low book-to-market factor assesses the sensitivity to the return difference of stocks with high and low book-to-market ratios.

As SRI portfolios often exclude these types of investments, they therefore experience a negative impact on their return. The authors argue that these two effects offset each other, leading to a zero effect. This finding would confirm and explain existing research discovering no difference in return between SRI and conventional portfolios.

Barnett and Salomon (2006) analyse mutual funds practicing SRI focusing on differences between social screening strategies. They use a data set of 61 SRI funds operating between 1972 and 2000. They find a curvilinear relationship between financial and social returns as financial returns decline at first with an increasing number of social screens and then recover. The authors therefore conclude that their findings support both the stakeholder theory and the modern portfolio theory (Barnett / Salomon, 2006, 31).

To summarise, a conclusion about the performance of SRI in relation to traditional investments has not been reached. It is important to clearly define the unit of investment that is analysed, as the performance of portfolios depends on other factors, such as the quality of portfolio management. Furthermore, different aspects of SRI might have diverse effects on return measures and different return measures might in turn not be affected in the same way. Therefore, a concluding remark on the performance of SRI investments is difficult. However, in sum, research so far shows that SRI does not lead to systematic disadvantages when comparing risk-adjusted returns.

4.4 THE SPECIAL CASE OF MICROFINANCE

4.4.1 SPECIAL FEATURES OF INVESTMENTS IN MICROFINANCE

Investments in microfinance differ in many ways from traditional socially responsible investments. Comparable with other asset classes, the field of SRI can be differentiated into traditional and alternative investment opportunities. Microfinance is part of the less conventional, alternative investments within core SRI, which leads to challenges in asset management. One way in which alternative asset classes are differentiated from traditional asset classes is that they follow unconventional return objectives (see Chapter 4.1). By contrast, a fund that is considered SRI is not necessarily different from a traditional fund when broad negative screening strategies are applied, such as invest-

ing in companies that are not involved in the production of weapons.[39] MFIFs are in any case different from traditional funds as they explicitly invest large parts of their assets in microfinance. Investing all, or at least large shares of the assets, in MFIs complicates the comparison of microfinance with other asset classes regarding risk and return objectives. As with other thematic funds, MFIFs consist of investments in small companies, whereas the MSCI World Index, for example, is composed of 70% large companies leading to a different risk profile (Globalance (ed.), 2012, 49). Moreover, there is no secondary market for investments in MFIs. In turn, investments placed by SRI funds are mostly attributed to companies traded on a regular stock exchange. Once a fund suspects that a particular company might underperform, the sale of the shares is possible. However, when it comes to MFIs, the sale of shares or the cancellation of a loan is only possible if another investor (usually having comparable information on the market) is willing to buy the stake or take over the loan. Furthermore, investments in microfinance are usually made on a long-term basis, which complicates an early exit.

Because microfinance is an alternative asset style, its specific characteristics apart from social performance may have a diversification effect on an existing portfolio (Staub-Bisang, 2011, 77). In contrast, traditional SRI funds show no diversification effect compared with conventional mutual funds (Bello, 2005, 51). Microfinance investments are best reflected by direct investments in SRI, such as in infrastructure, renewable energy or agriculture for example. Direct investment in SRI rather than investments in SRI-orientated companies results in less correlation with the development of global stock markets due to the alternative investment characteristics.

The distinction between the direct relationship among financial and social return versus the impact on the portfolio is crucial. Some studies focus on potential diversification effects caused by the integration of microfinance vehicles into an existing portfolio, while others examine the difference in performance among microfinance investments, independent of the portfolio. Researchers focus on differences between microfinance investments rather than comparing them with traditional investments, as social return is easier to compare across microfinance products.

[39] Cortez et al. even find that SRI funds are more sensitive to conventional indexes than to SRI indexes and conventional benchmarks show higher explanatory power (Cortez et al., 2009, 579).

Two examples of asset classes apart from SRI might reflect the special structure of MFIFs: investments in private equity (PE) and in real estate (RE). Funds invested in PE or RE are limited to a special market and are thus barely comparable with other asset classes. From an asset allocator's perspective, RE and PE have several similarities (Ibbotson (ed.), 2007, 6). PE investments focus on companies that are not publicly listed (Busack / Kaiser, 2006, 17). Similar to the microfinance market, private equity investors often actively support the management of companies in which they invest (technical assistance in microfinance). Furthermore, similar to PE and RE, microfinance investments are rather illiquid alternative investments (Verwilghen, 2006, 453).

Asset allocation decisions for traditional investments are based on the expected return and the standard deviation[40] of the whole asset class. For more established asset classes investment in a passive representation that mimics the risk and return characteristics of the whole asset class is possible (Ibbotson (ed.), 2007, 8). However, similar to PE, this is not possible for microfinance. Therefore absolute returns are analysed instead of returns relative to the asset class benchmark.

Comparable with private MFIFs, non-publicly listed PE or RE funds are only valued on a quarterly or monthly basis (Becker, 2010, 77). For these asset classes, listed funds show a much higher volatility of returns due to prices that include risks defined by the market. Listed PE-indexes might more appropriately capture the volatility of the private equity asset class (Ibbotson (ed.), 2007, 4). This means that the volatility of returns in the illiquid market of private funds[41] is not a good measure of risk (Becker, 2010, 77). As risk and return are the two crucial factors when choosing assets and managing portfolios, investments in microfinance are currently difficult to include in regular asset management processes (Becker, 2010, 77). This again emphasises the importance of the calculation of a meaningful index to represent the branch.

Interestingly, social factors do not play a significant role in the fund manager's investment process in microfinance. In contrast, for SRI, the social component is crucial in the investment decision as it is the factor that distinguishes SRI from traditional investments. One impediment to accounting for social factors is the fact that microfinance

[40] Standard deviation is a widely accepted measure of risk (Elton et al., 2003, 20).
[41] See also Chapter 5.2.1 for different structures of funds.

fund managers believe that microfinance is social "per se". Other factors are the lack of standardisation of measurement tools and the laxity of regulation standards (Urgeghe, 2012, 18). In microfinance, social return is often perceived as the concrete action of enabling poor people in emerging countries to gain access to financial services (see Chapter 3.3). The social return component is therefore rather standardised and straightforward. Because of this concrete focus, microfinance is classified as SRI-thematic investment and therefore belongs to the category of impact investing. This criterion for defining SRI investments is much stronger than ones that exclude certain topics or focus on others. Analyses related to SRI do not usually measure the impact of social return on financial return by comparing different SRI indexes, portfolios or funds (with the exception of Barnet and Salomon (2006)); instead they compare SRI funds to traditional investments. The main reason for this is the lack of comparability of the social return of different SRI investments. Most studies that find positive relationships between financial and social return in SRI, focus on positive or negative screening strategies applied by funds rather than on impact investments. However, one example of a thematic investment, the Pictet-Water-Fund-P, outperformed the MSCI World index between 2000 and 2010 by 36.3% (Staub-Bisang, 2011, 34).

4.4.2 *Financial versus Social Performance in Microfinance*

Arguments from the stakeholder theory are difficult to apply to microfinance investments as their social return component does not necessarily involve a specific sustainability component, which would be supposed to lead to higher financial return (Staub-Bisang, 2011, 78). Therefore a special analysis of the interaction between social and financial return for microfinance, apart from SRI, is presented here.

Until now, only few studies provide evidence of the relationship between financial and social return. Furthermore, the investor perspective (funds) has so far not been an often-discussed topic in this context.

Conning (1999) differentiates between low-end microfinance lending organisations (MFOs) serving clients with loans that are on average less than 20% of GNP per capita, and high-end MFOs with loans on average exceeding 85% of GNP per capita. The MFOs in between the two categories are defined as the broad-end group. The analysis

is based on data on 72 organisations. Staff expenses per average loan are reported to be more than three times higher than average for low-end MFOs. This means that more socially oriented MFIs (measured based on average loan balances) show lower efficiency (measured using staff expenses). He finds that low and broad-end MFOs charge interest rates that are on average around twice as high as those charged by high-end MFOs. The reason for the higher interest rates is assumed to be the intention to cover the higher costs. Finally, low and broad-end MFOs show lower levels of leverage.

Paxton (2003) creates a poverty outreach measure that includes depth of outreach and scale. Analysing 18 MFIs he finds that banks and credit unions serve a large number of clients below the poverty level. Furthermore, she measures a zero or even negative relationship between the reliance on subsidies and depth of outreach, indicating that financially self-sufficient MFIs reach out to the largest number of poor people.

Cull et al. (2007) analyse a database of 124 institutions in 49 developing countries, focusing on trade-offs between outreach to the poor and profitability. The authors find no significant relationship between profitability and average loan size in base regressions while using financial self-sufficiency as the main measure of profitability and operational self-sufficiency (OSS) and ROA for robustness checks. They find that larger loans imply lower average costs for both individual-based and solidarity-group lenders. Village banks are found to face the highest costs and subsidy levels while individual-based lenders earn the highest profits with lower levels of outreach.

Quayes (2011) analyses a database comprising information from financial statements as of 2006 provided by MIX. The aim of the study is to show empirical evidence that emphasis on financial performance of MFIs does not necessarily have a negative impact on outreach (Quayes, 2011, 3425). The author uses average loan balance divided by GNI per capita (ALB_GNI) as the measure of social performance. Financial performance is represented by a dummy variable for financial self-sustainability (FSS[42]). The author divides a sample of 702 MFIs based on the MFIs' disclosure levels in two groups. He finds a positive impact of FSS on the depth of outreach (using ALB_GNI) for the high-disclosure MFIs. Furthermore, the opposite interaction is measured and it is

[42] FSS is here defined as OSS>100% and takes the value 1 if OSS is greater than or equal to 100%, and 0 otherwise.

found that a lower average loan balance per borrower increases the probability of reaching financial self-sustainability for high-disclosure MFIs within a logit model using FSS as the dependent variable.

Another study by *Hermes et al. (2011)* analyses the interaction between efficiency and social return, based on data from more than 1,300 MFIs. The authors use stochastic frontier analysis to calculate an efficient cost frontier. They measure cost efficiency of MFIs in terms of the reduction in costs that could have been achieved if a MFI was more efficient in comparison with the efficient frontier. Using this data, the authors examine whether there is a trade-off between outreach and efficiency for MFIs. They find evidence for a negative relationship between efficiency and depth of outreach measured as percentage of female borrowers and average loan balances.

Using a social performance indicators tool for the measurement of social performance, *Bédécarrats et al. (2011)* analyse the relationship between financial and social return. The tool collects data on 70 indicators to measure social performance of MFIs and is based on the criteria defined by the Social Performance Task Force.[43] The authors find that social and financial performance (productivity, portfolio quality and operational expense ratio) are compatible and can be combined in order to achieve a double bottom line return (Bédécarrats et al., 2011, 23). They argue that finding the right mix of social performance practices in order to ensure financial sustainability is crucial. For example individual targeting (actively selecting clients based on criteria such as poverty level or exclusion) leads to higher transaction costs at first. However, the authors reason that the right strategy and time can lead to the recovery of efficiency through other elements of social and responsible performance as the right mix is important (Bédécarrats et al., 2011, 23).

To conclude, findings on the interaction between financial and social return do not yield consistent evidence (see Table 4.3). Researchers find that more socially orientated procedures incur higher costs (Conning, 1999; Paxton, 2003; Cull et al., 2007; Hermes et al., 2011). However, except for Quayes (2011), most studies find no significant impact on return measures (ROA / OSS). According to Conning (1999), more socially orientated MFIs charge higher interest rates.

[43] Tool is available on http://www.cerise-microfinance.org (CERISE (ed.), 2009).

The second part of this paper therefore aims to close the gap by focusing on portfolio yield in addition to efficiency and return measures.

Table 4.3 Overview Research on Microfinance

Author(s) and Year	Social Return	Financial Factors	Results
Conning (1999)	ALB_GNI	Staff expenses	Lower ALB_GNI → higher expenses, higher interest rates charged
Paxton (2003)	Outreach measure	Reliance on subsidies	Financially self-sufficient MFIs reach out to the largest number of poor
Cull et al. (2007)	ALB	OSS, ROA	Larger loans imply lower costs, no significant relationship with OSS, ROA
Quayes (2011)	ALB_GNI	FSS	Positive relation between FSS and ALB_GNI
Hermes (2011)	ALB, female	Efficiency (total costs)	Negative relation between depth of outreach and efficiency
Bédécarrats et al (2011)	SPTF factors	Productivity, portfolio quality, operational expenses	Right mix of social performance practices is important

Source: own research.

5. MICROFINANCE INVESTMENT FUNDS

5.1 CURRENT DEVELOPMENTS OF MICROFINANCE INVESTMENT FUNDS

Microfinance as a part of the socially responsible investment sector has experienced growth in the number of investment possibilities in recent years. By the end of 2009, 122 microfinance investment intermediaries (MIIs)[44], of which around 73 were active microfinance investment vehicles, could be identified, compared with 23 MIIs in 2000 (CGAP (ed.), 2010b, 7; CGAP (ed.), 2010c, 2). In 2011, seven new MIVs were founded, while nine closed their operations (Symbiotics (ed.), 2012b, 8). According to an annual survey conducted by MicroRate, a specialist microfinance industry service provider, a slowdown in MIV asset growth was observed in 2009 and in 2010 resulting in USD 7 billion in 2011 (see Figure 5.1) (CGAP (ed.), 2010c, 1; MicroRate (ed.), 2012, 5). The reason for this slowdown is partly due to increased competition in several major countries as discussed earlier (see Chapter 3.4). Nevertheless, according to a study conducted by CGAP, the top ten MIVs again showed a 7.2-percentage growth in 2011 (CGAP (ed.), 2012, 1), total microfinance assets grew by 15% in the same year and they are expected to grow by another 19% in 2012 (Symbiotics (ed.), 2012b, 7).

The structure and form of MIVs is constantly changing. For example, the proportion of equity investments is growing rapidly and the demand from MFIs for local currency is expanding (CGAP (ed.), 2010b, 15; Symbiotics (ed.), 2010, 2; Brugger, 2004, 4).

Most funds use Luxembourg or Lichtenstein[45] as their preferred microfinance fund jurisdiction. In Switzerland, the Swiss Financial Market Supervisory Authority (FINMA) has to date only approved the responsAbility Global Microfinance Fund to be sold publicly (Symbiotics (ed.), 2011, 28). Most funds not being approved by the regulator are not allowed to publicly advertise and are therefore limited to restricted groups of accredited investors (Lhabitant, 2006, 404).

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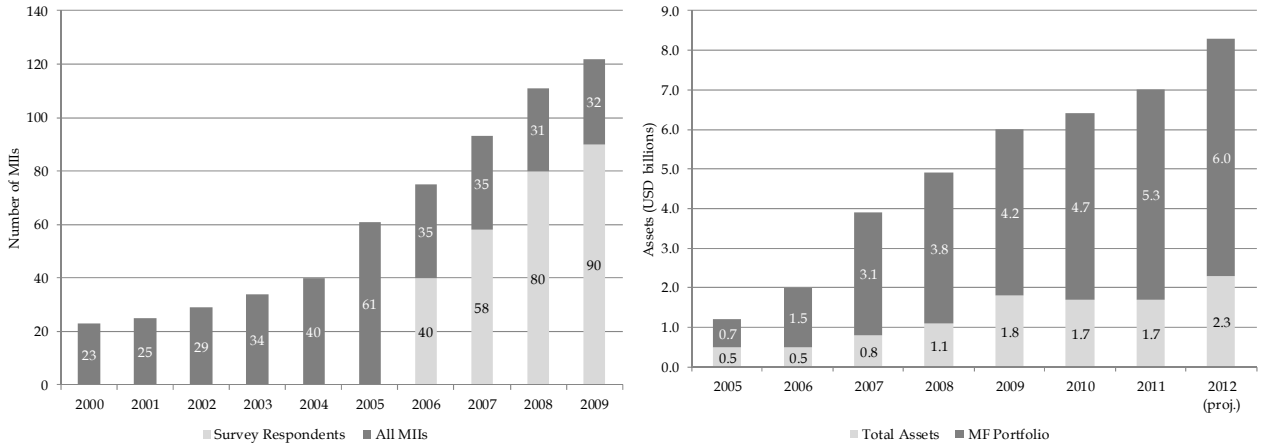
[44] MIIs combine MIVs, holding companies and other MIIs such as cooperative companies, NGOs or foundations (CGAP (ed.), 2010a, 37).

[45] Reasons for the choice of Luxembourg / Lichtenstein are the policy to back microfinance and impact investments, fast registration process, comparably low fees etc. For more details refer to Symbiotics (ed.), 2011, 28.

Figure 5.1 Growth in Microfinance Investment Vehicles



Source: CGAP, 2010b, 7; MicroRate, 2012, 4.

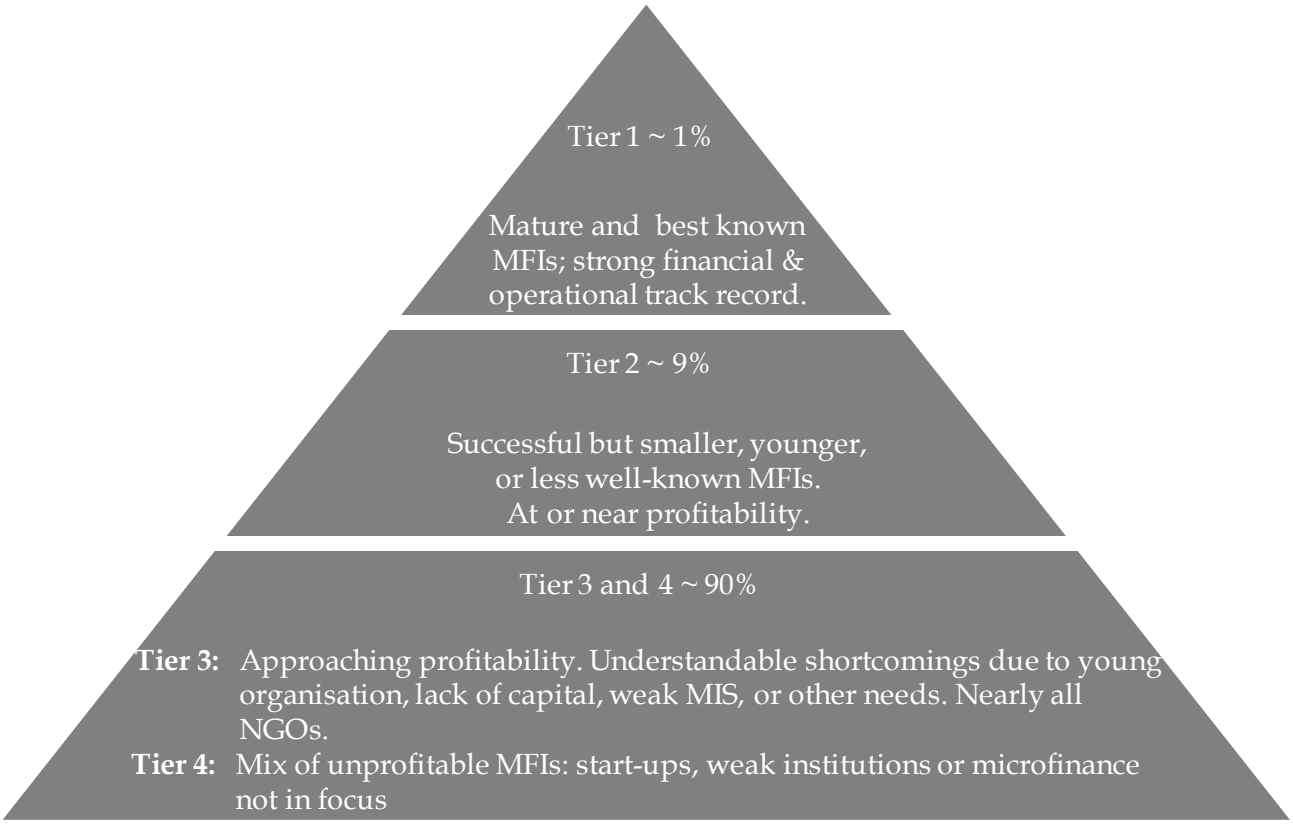
In recent years, MIVs have found it difficult to place their funds as there have been few investment opportunities and a lack of regulated MFIs, and this has led to a growing liquidity position in their portfolios (MicroRate (ed.), 2010, 3; LUXFLAG (ed.), 2010b, 16). This excess liquidity on the balance sheets of many MIVs puts pressure on the financial returns of the funds. The global financial crisis, which led to a decline in demand for funding by MFIs in late 2009 and early 2010, could be one reason for this development. Another explanation for the increasing proportion of the MIV's liquid assets is that they took a more conservative and defensive position. Recent surveys show that investment vehicles have improved the selection procedures for the placement of their funding (MicroRate (ed.), 2011, 4).

MFIs are commonly classified into four different "Tier-Groups" (see Figure 5.2). The institutions are grouped according to their financial and operational track record and their maturity. So-called Tier 1 MFIs are the best known and most mature MFIs with a strong financial and operational track record[46]. Taking account of all MFIs, approximately 1% can be classified as being Tier 1 quality, and most of the profit-orientated funds aim to invest in these highest quality MFIs. This means that the number of MFIs that MIVs find feasible for investing is limited to a few hundred, and these are pursued by all MIVs. A recent study shows that in 2009 the top 7 MIVs were financing 574 MFIs, of which 85.35% could be classified as Tier 1 (Wiesner / Quien, 2010, 11). Experts cur-

[46] A precise definition of the "Tiers" is not applied, CGAP uses a classification system that is only based on assets: Tier 1: Assets in excess of USD 50 million; Tier 2: Assets of between USD 3 million and USD 50 million; and Tier 3: Assets less than USD 3 million (Reille et al., 2009, 13).

rently express serious concerns about the future of the MIV market due to the limited investment universe (Urgeghe, 2012, 5).

Figure 5.2 Segmentation of Microfinance Institutions[47]



Source: based on Mehan, 2004, 7.

Because of the relatively large supply of investment funds available from MFIFs and the comparatively low number of profitable (Tier 1) MFIs, a certain bargaining power exists for selective MFIs. This may explain the current trend towards granting longer-term equity and local currency loans by MFIFs. When funded by equity investments or loans in local currency, MFIs are able to reduce their risks, especially by shifting the currency risk to the investor (Reille / Forster, 2011, 7). Some funds even seek local currency investments for speculative reasons and for emerging market exposure (Reille / Forster, 2011, 7.)

According to responses collected by MicroRate in their yearly survey on MIVs in 2010, factors perceived to hinder growth were government regulation, negative publicity and lack of demand from investable MFIs. Meanwhile, a number of official agencies, do-

47 Percentages of all MFIs.

mestic and international banks and international development finance institutions are competing to fund lucrative MFI targets (MicroRate (ed.), 2011, 5). This trend forces MIVs to concentrate their assets into fewer MFIs, resulting in a decreased number of microfinance investments while their assets continue to grow. The most obvious solution to this development would be the support of smaller Tier 2 or 3 MFIs, leading to more investment possibilities for MFIFs and other financial intermediaries. Starting in 2010, stronger interest in Tier 2 and Tier 3 MFIs is observed (LUXFLAG (ed.), 2010b, 17). This could be a profitable strategy for both, MFIs and MFIFs, because Tier 2 and 3 MFIs need funding and support to become the next generation Tier 1 MFIs. Many funds and companies are furthermore expanding their supporting activities for MFIs by offering technical assistance and capacity building.

Because MFIFs have varied structures (MicroRate (ed.), 2011, 14), some important criteria for fund classification are discussed in the next section. The aim of this analysis is to highlight differences that could influence investment decisions and benchmarking.

5.2 CRITERIA TO CLASSIFY MICROFINANCE INVESTMENT FUNDS

5.2.1 STRUCTURE

Traditionally, two reasons for the use of investment companies (such as funds) rather than a direct investment in financial assets can be named: Economies of scale[48] and professional management (Sharpe et al., 1995, 776). Besides unit investment trusts, managed investment companies, such as closed-end and open-end investment companies, exist (Sharpe et al., 1995, 778). While a unit investment trust owns a fixed set of securities for the whole lifetime, managed companies can adjust their portfolios. The focus here is on managed companies to capture the structure of most microfinance funds.

For the purpose of calculating indexes used to benchmark asset classes, the securities included need to be comparable in terms of their performance calculation guidelines. Managed investment companies describe a board of directors in charge of a portfolio. They can have various structures as they might be organised as a legal entity or as a

[48] Economies of scale can be realised if the investment company includes diverse securities at lower costs (reduced commission).

vehicle simply applying a set of legally defined relations between the involved entities, such as the custodian and the fund manager (e.g. "Fonds Commun de Placement (FCP)" in Luxembourg).[49] Examples of legal entities present in Luxembourg include Societé d'investissement à capital variable (SICAV), Societé d'investissement à capital fixte (SICAF) and Societé d'investissement à capital risque (SICAR).

In microfinance, most vehicles are organised as legal entities (among the 24 funds labelled by Luxflag, 21 funds have a legal status of either SICAV or SICAR (LUXFLAG online, 13.11.2012), whereas the responsAbility Global Microfinance Fund for example is organised as a FCP. From an investor's perspective the legal status of a fund is not important when it comes to performance as long as the measures are comparable (see Chapter 6).[50]

Three issues should be considered when comparing a large number of funds (Cesari / Panetta, 2002, 101):

- classification of funds
- expenses and fees
- survivorship bias.[51]

This section examines the classification of funds, analysing structures and evaluating different techniques for building groups. Expenses and fees are outlined within the performance analysis in Chapter 6.3.2.

Microfinance funds[52] can generally be described as actively managed vehicles because the fund managers dynamically select and manage their portfolio while passively managed funds, by contrast, follow an index. However, MFIFs vary greatly in terms of their structures, characteristics and portfolios.

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[49] See http://www.lowtax.net/lowtax/html/jlxobs.html.

[50] Nevertheless, tax treatment for different types of investment vehicles differ and might have an impact on the investor's final outcome (Ogier (ed.), 2012).

[51] Survivorship bias, the third issue mentioned by Cesari / Panetta, is not analysed here in detail as in the short history of the microfinance asset class, only few fund ceased operations and the ones that disappeared are difficult to locate because some of them have not been known before (see Chapter 9.1).

[52] International investment opportunities in microfinance (MIVs) can be roughly grouped into investment funds and structured products (Hechler-Fayd'herbe / Lüscher, 2008, 1).[52] The focus here is on the funds that were in existence at the time of this investigation.

MFIFs are often grouped according to their degree of commercialisation, meaning according to their objectives regarding financial and social return. Funds that classify themselves as either *commercial* or *quasi-commercial* target higher financial return compared with non-profit *microfinance development funds*, which focus on social factors (Goodman, 2007, 26-28). The aim of the fund needs to be taken into account when assessing the performance of a MFIF, as development funds cannot be expected to have the same financial return as traditional funds. Quasi-commercial funds have clear financial objectives and are mostly funded by private donors and development agencies. The third category, the development funds, are commonly organised as cooperatives or non-profit entities and do not necessarily seek financial profit, but aim to preserve the real-valuation adjusted amount of their original capital. Moreover, these funds often provide MFIs with technical assistance. Table 5.1 presents an overview of popular examples of MFIFs within each degree of commercialisation, grouped according to their own statements.[53]

Table 5.1 Degree of Commercialisation of MFIFs

Degree of Commercialisation	Examples
Commercial Funds	Dexia Microcredit Fund[54], Dual Return Fund, ASN Novib Fund, responsAbility Global Microfinance Fund, Triodos Fair Share Fund, EFSE
Quasi-commercial Funds	Accion Investments in Microfinance, ProFund, Africap, IC Asia Women Microfinance Fund, LMDF
Development Funds	CreSud, Alterfin, Incofin

Source: own research, based on Goodman, 2007.

Traditional funds attracting private and institutional investors provide them with more information on financial returns, cost structure and risks than microfinance funds do,

[53] Statements on the degree of commercialisation were found on websites or in the factsheets published by the particular funds.

[54] The Dexia Microcredit Fund is now called BlueOrchard Microfinance Fund.

mostly because of regulatory directions. As commercial investors become more active in the microfinance sector, funds need to improve the quality of their reporting.

The differentiation between *public* and *private funds (or private placement funds)* is important. Public and private funds differ particularly with regard to their fund raising strategies. Private funds tend to focus on a smaller group of repeat investors whereas public funds are open to a large base of potential investors. Private funds are not sold to the general public but are distributed privately to institutional or private investors, especially HNWIs. Typically, private funds require high minimum investments (De Sousa-Shields, 2007, 88). Private funds do not have to be registered with the Securities and Exchange Commission and the disclosure of financial information or an investment prospectus takes place on a voluntary basis.

In microfinance, only few funds are public and easy accessible to a large range of investors. Few investment companies currently offer publicly traded funds (see Table 5.2 for examples). In contrast with other funds, publicly traded funds operate under strict regulatory requirements and the costs to launch and operate a publicly available fund represent a challenge (De Sousa-Shields, 2007, 87).

Table 5.2 Examples of Microfinance Asset Managers (2011)

Investment Company	Domicile	Assets in Microfinance
ACCION	USA	USD 316 million
BlueOrchard Finance SA	Switzerland	USD 777 million
Development Finance Equity (DFE) Partners	Switzerland	USD 34 million
Developing World Markets (DWM)	USA	USD 481 million
Vision Microfinance	Austria	n/a
LLB Fund Services AG	Liechtenstein	n/a
responsAbility Social Investments AG	Switzerland	USD 635 million
Triodos Bank	Netherlands	USD 328 million
Wallberg Invest	Luxembourg	n/a

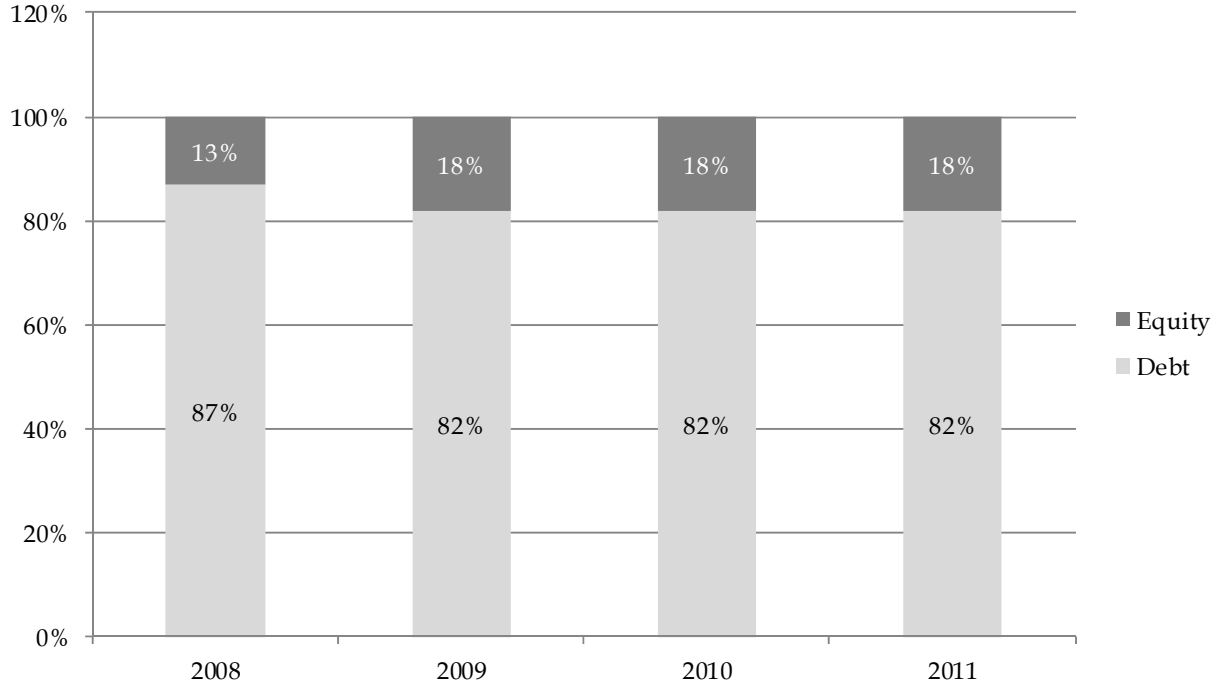
Source: MicroRate (ed.), 2011, 10; www.mixmarket.org; Symbiotics (ed.), 2011, 12.

These regulatory requirements are possible reasons why MFIFs are not usually publicly listed. Requests such as daily valuations and the higher transaction costs constitute hurdles for microfinance funds wishing to enter the publicly traded market, as fund volumes are still small and costs need to be kept low.

In general, MFIFs are invested directly (*debt* or *equity*) in MFIs. In 2011 the proportion of debt clearly dominated amounting to around 82%, with equity at 18% and guarantees in the minority at less than 0.5% (see Figure 5.3) (MicroRate (ed.), 2012, 9).

Debt funds are the most common investment option for microfinance investors. Debt instruments used by investment funds include mostly promissory notes, short paper documents or term loan agreements without pledge or collateral provided by the MFI. These instruments are not listed but are under custody of the funds' banking agents and are largely under the jurisdiction of Luxembourg or Lichtenstein (see Chapter 5.1). Due to limited liquidity, funds book their investments using the amortised cost method and accruing interest and possible impairment for the calculation of their net asset value (NAV) (Symbiotics (ed.), 2011, 14). Compared with other investment vehicles in microfinance, debt funds are more transparent, liquid and usually structured as open-end (Symbiotics (ed.), 2011, 14, 21).

Figure 5.3 Composition of Microfinance Assets (2008-2011)



Source: MicroRate (ed.), 2012, 9.

Guarantees meet the objective of enabling financial access of the MFIs through local commercial banks by the provision of insurance contracts, guarantee agreements or collateral through deposits. However, the number of MFIFs using guarantees as an instrument has declined in recent years despite offering the advantage of avoiding currency risks (Symbiotics (ed.), 2011, 15).

The proportion of equity investments in microfinance has been growing fast in recent years (O'Donohoe et al., 2009, 3), amounting to 18% of all microfinance assets in 2011. Equity investments are either held by a holding company or by a private equity fund. Private equity investment funds are currently not transparent, especially with regard to rates of return, as many of them are either still in the investment process and not able to calculate returns before closing or they are not willing to disclose performance data publicly (Symbiotics (ed.), 2011, 21). Examples of private equity funds are the BlueOrchard Private Equity Fund, Balkan Financial Sector Equity Fund and the Aavishkaar Goodwell India Microfinance Development Fund.

The distinction between different types of funds in terms of private / public and equity / debt is important with respect to total expense ratios (TER). TERs are higher for equity and private funds than for debt and public funds (GGAP (ed.), 2010b, 30) (see Chapter 6.3.2).

The above-mentioned possibilities for grouping funds lead to the classification that is most often used in the sector, introduced by CGAP (CGAP (ed.), 2010a, 4):

- Fixed-Income Funds
- Equity Funds
- Mixed / Hybrid Funds
- Public Placement Funds
- Private Placement Funds
- Cooperative Companies / Non-governmental Organisations (NGOs)
- Collateralised Debt Obligations (CDOs).

However, this approach to classification tends to reflect the view of investors and does not account for the individual characteristics of the funds.

The differentiation between public and private funds, debt and equity, commercial and quasi-commercial or the classification of CGAP according to investment styles is not

detailed enough for the present analysis. Furthermore, a clear assignment of the funds to these categories is difficult. To capture the individualities of funds influencing benchmarks, specific characteristics and the underlying portfolio are addressed in the next two subchapters.

5.2.2 CHARACTERISTICS

Mutual funds are typically grouped according to their investment objectives and the "style" of their managers.[55] Classifications of funds are important for investors to better estimate the future behaviour of their investments and to provide hints for benchmarking. However, classification based on investment objectives or management styles is not the best way to explain potential differences in future returns or the calculation of benchmarks. A better way is to compare risk and return characteristics of funds over as many years as possible and to build an empirical model to test for characteristics of the funds (Brown / Goetzmann, 1997, 374 ff.). However, the history of the microfinance sector is too short and some funds do not publish data on returns more than once a year. Therefore, some qualitative classification criteria which provide the basis for the detailed empirical analysis of MFIF's characteristics in Chapter 8 are introduced.

As discussed earlier, not all funds target the same *investors*; therefore differentiation according to permitted investors could be of importance from a benchmarking point of view. For special types of investors, such as private individuals for example, an index including funds that only admit institutional investors is unlikely to be useful.

MFIFs differ greatly in their *size* and *age* (Derwall / Koedijk, 2009, 215). When comparing their financial performance, these two measures might be important as some newer funds may suffer from disadvantages due to their limited experience. Also, as profitable microfinance investments are rather rare and competition for them is keen, early movers may have an advantage as they have the opportunity to capture large parts of the market. As discussed earlier, the largest ten MFIFs cover considerable parts of the whole market (MicroRate (ed.), 2012, 9). The many small MFIFs that exist are therefore not comparable with large MFIFs in terms of their market power and diversification possibilities. Nevertheless, methods exist to consider differences in size within index

[55] Other typical criteria are size and systematic risk (Goldreyer / Diltz, 1999, 25).

calculation, as for example the calculation of equally weighted indexes versus asset-weighted approaches. Furthermore, age differences exist in all branches and other indexes do not account for possible disadvantages by younger funds either.

Within microfinance, *currency* is another essential topic because funds place their investments in many different countries. Funds are invested in either hard or local currency, and hedging local currency against possible future developments is important. To date, there are few hedging approaches that attempt to facilitate the funds' investments in local currency (e.g. MFX: Microfinance Currency Risk Solutions[56]). Most funds use these hedging techniques for large parts of their local currency investments; therefore currency is not used as a classification criterion in the present approach.

The countries where investments are made and the diversification between countries are criteria that are taken into account for the classification of funds in general (Cesari / Panetta, 2002, 102). MFIFs have various possibilities for managing regional *risks*. One approach is the diversification of assets across different MFIs and countries. Therefore, the top country and MFI exposure as well as the top five are often taken into account (Symbiotics (ed.), 2011, 24). With the diversification between countries and MFIs, funds are able to manage not only country risks but also the specific default risks of selected MFIs, currency risks and liquidity risks. Within this study, similar to other research approaches, risk is therefore measured as the concentration of the fund's microfinance assets into countries and MFIs respectively (Symbiotics (ed.), 2011, 24).

Furthermore, *social return* is an important classification criterion, which is elaborated in detail under performance analysis (see Chapter 6.2).

The next section focuses on the underlying portfolio of MFIFs and the two main properties of MFIs: legal status and regional distribution. Current research is summarised as background for the analyses in Chapter 8.2 and 8.3.

5.2.3 UNDERLYING PORTFOLIO

Besides differences in their structures and characteristics, MFIFs vary according to their underlying portfolio determined by the individual qualities and preferences of fund managers.

[56] http://www.mfxsolutions.com/.

The *legal status* of MFIs invested in varies. Banks, credit unions / cooperatives, non-bank financial institutions (NBFIs) and non-governmental organisations (NGOs) are commonly distinguished.[57] The various legal structures of MFIs can have an impact on financial and social performance and risk of the fund.

One factor affecting financial return is the cost function, which can vary between MFIs based on their structure, for example due to diverse levels of subsidies which these institutions receive from outside (Hermes et al., 2011, 11).

Hassan and Sanchez (2009) analyse MFIs in Latin America, Middle East and North Africa and South Asia to find sources of inefficiencies. Technical efficiency is defined as the ability of a MFI to maximise output from a given set of inputs. [58] The authors find higher levels of technical efficiency in formal MFIs such as banks and credit unions (Hassan / Sanchez, 2009, 1).

In a mean-variance spanning test[59] performed by *Galema et al. (2011)*, banks and rural banks are found to be the best performers according to ROA and return on equity (ROE) compared with NGOs, NBFIs and credit unions / cooperatives (Galema et al., 2011, 513).

Tchakoute-Tchuigoua (2010) analyses MFI data between 2001 and 2006 and shows that the financial performance of private MFIs (microfinance banks or other non-banking financial institutions) is better only when using portfolio quality as performance measure. Moreover, when analysing social performance, interestingly the author finds that for-profit MFIs show higher social performance than not-for-profit MFIs (Tchakoute-Tchuigoua, 2010, 439 ff.).

On the other hand, *Cull et al. (2009)* find that banks give larger loans (160% average loan size in relation to income vs. 48% for NGOs[60]) and serve fewer customers than NGOs do. Taking loan size as a proxy for the poverty of customers, banks therefore serve fewer poor customers than NGOs do, leading to lower costs, assuming that a

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57 e.g. MIX data base.

58 The authors define the source of inefficiency as purely technical rather than in relation to scale, assuming that less efficient MFIs are wasting resources or not producing enough output.

59 The mean-variance spanning test is a methodology that is used by the authors to analyse if the risk-return profile changes for investors after adding microfinance to a portfolio (Galema et al., 2011, 509).

60 160% for banks and 48% for NGOs represent the median in a sample of 315 institutions.

large part of the costs for issuing loans is fixed (Cull et al., 2009, 179 ff.). Moreover, NGOs serve more female clients than banks do (Cull et al., 2009, 182).

These results indicate that the legal status of the MFIs is important with regard to their performance. Although the variables used and the results of existing research studies are ambiguous, fund managers base investment decisions on the legal status of MFIs. Funds do not usually provide detailed information on their underlying portfolios, mostly because they wish to avoid having other funds competing against their profitable investments.

Besides the legal status, the *regional distribution* of microfinance investments is important for the analysis of MFIFs (Gutiérrez-Nieto et al., 2007, 140). Some funds focus on one region or country while other funds specialise in diversification across regions.

In microfinance, regional aspects and diversification matter, as differences in salaries and cost of living strongly influence the costs of MFIs and thereby the financial returns.

Evidence shows that, when focusing on operating expenses in relation to the portfolio, South Asian MFIs are most efficient whereas MFIs in Sub-Saharan Africa and Latin America are least efficient (González, 2011, 1; Hassan / Sanchez, 2009, 20). In contrast, in a study by *Stephens / Tazi (2006)* analysing return on assets by region, Latin American and Eastern European and Central Asian MFIs are found to have performed quite well, while Southern African and South Asian MFIs scored worse (Stephens / Tazi, 2006, 25).

According to *Galema et al. (2011)*, MFIs located in Africa show the lowest values of ROA and ROE. Possible reasons are higher costs caused by more expensive infrastructure, interest rate ceilings and high inflation (Galema et al., 2011, 512). *Caudill et al. (2009)* find that in 2003 and 2004, MFIs in Eastern Europe and Central Asia showed on average higher gross portfolio yield and OSS than MFIs from other regions (Caudill et al., 2009, 655). An analysis of the fraction of the portfolio being at risk (meaning overdue more than 30 days, PAR30) finds that South Asia and Africa carry the highest levels of credit risk among all regions (Stephens / Tazi, 2006, 28).

When it comes to social performance, South Asia beats all other regions in the number of borrowers and by serving some of the poorest clients in the world when measured

through size of average loan balances compared with GNI per capita (Stephens / Tazi, 2006, 23; Rhyne / Otero, 2006, 9).

Regional factors are, of course, influenced by the specific characteristics of countries. Three major factors have been found to be important for the development of the microfinance industry in a country (Economist Intelligence Unit, 2009, 8):

- the regulatory framework (regulation of microfinance operations, formation and operations of regulated and non-regulated MFIs, regulatory and examination capacity)
- the investment climate (political stability, capital market stability, judicial system, accounting standards, governance standards and MFI transparency)
- the institutional development of the microfinance industry (MFI services, credit bureaus and level of competition).

To conclude, differences in performance and risk persist among MFIs according to regions although the characterisation and the extent of the differences have not yet been examined in a consistent manner.

5.3 *Summary of Microfinance Investment Fund Classification*

MFIFs can be classified according to three parameters: structure, characteristics and portfolio. This classification approach indicates that despite the small number of funds in existence, there are large differences. Taking these different characteristics into account might be important when comparing and benchmarking MFIFs. Based on the survey, the existence of these differences is investigated, and the participating funds are characterised in Chapter 8. MFI-level data are taken into account to assess potential regional and structural distinctions between MFIFs based on their portfolio. Furthermore, the most important criteria to distinguish MFIFs according to structure, characteristics and portfolio are presented based on the data collected in the survey.

5.4 *Existing Research on MFIFs*

Literature on MFIFs is rare as most research focuses on MFIs. This section gives a short overview of some publications that are relevant to the present investigation.

CGAP, MicroRate and Symbiotics publish annual reports on the microfinance investment market including details on the number of vehicles, regional distribution and

debt / equity investments as well as investors. Since 2008 these reports have provided a comprehensive picture of the market, though it is unfortunate that they are only published annually. For most quantitative analyses, yearly figures are not sufficient. In 2010, CGAP published the Microfinance Investment Vehicles Disclosure Guidelines for MIVs reporting to investors (CGAP (ed.), 2010a). The guidelines include information on the profiles of MIVs, selected indicators of financial performance and ESG policies.

Matthäus-Maier and von Pischke (2007) focus on MFIFs in their publication "Microfinance Investment Funds". Two parts are differentiated, one describing the market for investments in microfinance and the other risks and governance in microfinance investments. The book provides a comprehensive picture of the market though it lacks detailed empirical analyses.

Lorenzo (2011) focuses on the performance of large public MIVs. She avoids the difficult data situation by limiting the research to funds that publish data on Bloomberg. This approach, comparing the performance of MFIFs with other investments, while interesting and important, could nevertheless lead to a biased picture of the market as only the large and most established funds are included. She finds low but positive and stable returns (low standard deviation compared to benchmarks[61]) of the 10 MIVs that she analyses. Furthermore, using beta values, she finds a low correlation between MIVs and the broader market, indicating the diversification possibilities of microfinance.

Becker (2010) concentrates on investments in microfinance through MIVs and claims that applying a scenario methodology for the integration of the "new" microfinance asset class to an existing asset allocation framework is more useful than quantitative approaches. Arguments made for the inefficiency of quantitative analyses of the microfinance market for asset allocation purposes include the short history, specific valuation concepts, and the absence of a liquid secondary market.

To date, most studies that focus on MFIFs either include only the few large funds, or provide information only on an annual basis, or they are purely qualitative. This overview demonstrates again the need for further analysis of MFIFs. The present study attempts to reveal as much information on investments in microfinance as possible.

[61] MSCI World, DJSI World and JP Morgan EMBI.

6. PERFORMANCE MEASUREMENT OF MICROFINANCE INVESTMENT FUNDS

6.1 FINANCIAL PERFORMANCE

6.1.1 NET ASSET VALUE

In microfinance, performance indicators are not standardised. Their calculation is therefore not easy and may differ across the fund universe, especially when comparing debt and equity funds. Because the fund shares are not publicly traded, no prices are available and therefore analyses need to be based on accounting values. Mutual funds are traditionally valued using net asset values (NAVs) by subtracting liabilities from assets (see Table 6.1 for an example) (Sharpe et al., 1995, 777).

Table 6.1 Calculation NAV: responsAbility Global Microfinance Fund 31.3.2011

Assets (USD)	
Investments in securities at market value	407,096,244.65
Cash at banks	102,715,860.34
Receivable for securities sold	4,674,947.82
Income receivable	8,668,039.36
Prepaid expenses	644,343.25
Total Assets	**523,799,435.42**
Liabilities	
Due to banks	934,664.54
Provisions for accrued expenses	1,177,753.73
Other Liabilities	2,740,741.54
Total Liabilities	**4,853,159.81**
Net Assets	**518,946,275.61**

Source: responsAbility (2011a).

For debt funds, the NAV is influenced by MFIs' interest payments as well as the composition and quality of the portfolio (taking account of new investments, sale of securities and defaults). In contrast, the performance of equity funds changes depending on the valuation of the underlying assets, which is challenging and different from the valuation of traditional banks (O'Donohoe et al., 2009, 1). Therefore, a separate analysis of equity funds is reasonable and is presented in subchapter 6.1.3.

The net asset value per share is calculated using the following formula:

$$Net\ Asset\ Value\ per\ Share = \frac{Market\ Value\ of\ Securities + Cash\ and\ other\ Assets - total\ Liabilities}{Number\ of\ Outstanding\ Shares}$$

6.1.2 OPEN-END FUNDS

The focus in this Chapter is on open-end funds where the prices paid by investors do not reflect supply and demand for the funds' shares (as for example stock prices do). The reason for this difference is that traditional companies offer a limited number of shares defined at the initial public offering (IPO) and might release more shares later, but often hesitate because of a possible devaluing effect. Open-end funds, on the other hand, are able to issue more shares and adapt to the current demand situation, so fund-share prices cannot be artificially inflated. Funds do not usually trade on open markets; instead, fund managers buy and sell the fund shares themselves, or they engage a sales force. Funds engaging a sales force are known as load funds as they charge the investors a percentage commission on the net asset value (Sharpe et al., 1995, 784). NAVs therefore reflect the real calculated value of the fund divided by the number of outstanding shares. In the case of microfinance, most MFIFs restate their net asset value quarterly or monthly as MFIs usually pay their interest then. Therefore, most funds provide their net asset values on either a monthly or a quarterly basis while some only calculate their performance once a year.

In times of insecurity or fear of crisis funds will build provisions to prepare for potential defaults by customers (namely MFIs), which will lower the NAV immediately but have a cushioning effect once a crisis or downturn appears (see Table 6.1). For example, after a recent crisis affecting Bosnia & Herzegovina and Nicaragua, responsAbility

built new provisions of USD 3.3 million in 2010, resulting in a total of USD 13.0 million (2.5% of the NAV) (responsAbility (ed.), 2011a, 8).[62]

Open-end funds usually report returns using the NAV per share. NAV per share is influenced only by the valuation of the investments whereas the total NAV of an open-end fund is also influenced by the number of shares outstanding. Open-end funds can release new shares if more capital is needed. This increases the assets and therefore the NAV by an equal amount so that existing investors are not affected. The price of the NAV is adjusted each time new shares are sold, which means that the development of the NAV per share exactly reflects the performance of the fund.

Another important factor when analysing MFIFs is that absolute return figures are typically used (e.g. ex post alpha), whereas risk-adjusted measures are calculated for more developed asset classes. Some widely used performance measures control for risk when measuring performance as follows (see Table 6.2). These measures can be applied for the evaluation of stock returns as well as other securities, such as funds (Sharpe, 1966, 119).

All these single-index models would be appropriate for comparing the risk-adjusted returns of microfinance investments once an adequate benchmark is available. The Jensen Alpha would probably be the most significant measure as it captures the extent to which a portfolio manager exceeds the performance of a combination of the market portfolio and the riskless asset (Elton / Gruber, 2011, 17).

[62] The responsAbility global microfinance fund started provisioning for potential defaults only in 2009 (based on the difficult economic and political situation in Nicaragua and Bosnia & Herzegovina), according to the annual reports from 2003 up to 2009 no specific provisioning was done before.

Table 6.2 Risk-Adjusted Performance Measures

Name	Formula	Description
Ex post Alpha	$\alpha_P = ar_p - ar_{bp}$	The average performance of a mutual fund in comparison to a benchmark portfolio can be calculated using the ex post alpha, α_P ar_p: Average return of the portfolio ar_{bp}: Average return of the benchmark portfolio
Sharpe Ratio	$Sharpe\ Ratio = \frac{R_P - R_F}{\sigma_P}$	When applying the Sharpe Ratio the result is the amount of excess return per unit of volatility (total risk). R_P: Average return on portfolio R_F: Return of risk-free asset σ_P: Standard deviation of portfolio P
Treynor Ratio	$Treynor\ Ratio = \frac{R_P - R_F}{\beta_P}$	The Treynor Ratio is used to analyse excess returns. Excess returns are measured against the beta-factor, representing the systematic risk. R_P: Average return on portfolio R_F: Return of risk-free asset β_P: Systematic risk
Jensen Alpha	$\alpha_P = [R_P - R_F] - \beta_P[R_M - R_F]$	The Jensen Alpha is measured as the difference between the realised risk premium and the expected risk premium. A positive alpha stands for superior performance, a negative alpha for weak performance. R_P: Return on portfolio R_F: Return of risk-free asset R_M: Market return β_P: Systematic risk

Source: Sharpe, 1966, 119 ff.; Anderson / Ahmed, 2005, 13 ff.; Cochrane, 2005, 20 ff.; Sharpe et al., 1995, 798.

Nevertheless, an appropriate return measurement culture has to be established for each new asset class within a process. Similar to the performance assessment of other mutual funds, the application of multi-index models will lead to even more meaningful results than the performance measures presented above (Elton / Gruber, 2011, 31). For newly established investment possibilities, however, the factors that are important for the calculation of risk-adjusted performance measures are unknown and hard to

estimate. For example, the determination of the systematic risk of the market (beta value)[63] or the appropriate market return is difficult. Beta values are particularly hard to determine, as usually historic peer group betas are calculated. The history of the microfinance market is too short, and, due to the small number of comparable funds, the number of observations is insufficient to represent the market adequately. This means that as with the treatment of other alternative asset classes, fund managers take total risk into account rather than analysing risk relative to a benchmark. Traditional asset managers do not consider total risk, as they perceive that passive risk is managed by the market itself (Jaeger, 2006, 400). Therefore, they value the risk relative to the benchmark. The approach of alternative asset managers is more conservative regarding risk. Each fund has a high amount of specific investment risk (idiosyncratic risk). This means that the average standard deviation of a single MFIF should be higher than the standard deviation of the whole microfinance asset class.[64]

6.1.3 *EQUITY FUNDS*

Equity MFIFs need to value their investments in MFIs and in other funds. Therefore, information provided by MFIs is crucial to evaluate investments as well as to choose potential further investments. Valuation is the most important source of information on MFIs, because other KPIs, such as ROE and ROA, could mislead by simply reflecting a small NAV base of a particular MFI. However, the valuation of MFIs is very difficult and to date, no standardised process exists (O'Brien, 2006, 279ff.).

In order to value the return and risk expectations of MFIs, profound knowledge of the market is necessary. Moreover, different valuation methodologies can be applied. Most MFIs are not listed on a public stock exchange and the lack of availability of readily identifiable share prices usually leads to lower values (O'Brien, 2006, 278). The possible valuation approaches are the following (O'Brien, 2006, 278; O'Donohoe et al., 2009, 14):

- net asset values
- discounted cash flow (DCF)
- market prices

[63] The beta value represents the systematic risk inherent in the sensitivity of prices to changes in the market.

[64] A similar situation to private equity funds (Ibbotson, 2007, 8).

- multiples of earnings or dividends paid
- multiples of net assets or book value.

All of these approaches have inefficiencies when it comes to microfinance. NAVs provide a historical analysis of an investment and do not reflect current market conditions, or potential prospective development. Discounted cash flow, which is a very popular valuation method, implies the identification of free cash flows as well as the determination of a suitable cost of equity, involving the definition of adequate growth rates, risk factors and beta values, which is difficult in this sector (see 6.1.2 for the similar situation at the fund level).

Market prices are, of course, a useful measurement for performance, although only few MFIs are publicly listed.[65] The use of financial multiples of earnings, dividends or net assets is complex in the field of microfinance due to the small number of transactions observed (Reddy, 2007, 11). In addition, after the specification of a value, an illiquidity discount is necessary to account for the lack of a liquid secondary market (O'Donohoe et al., 2009, 16).

A special valuation approach is justified because MFIs differ from traditional banks and companies. In particular, their objective to deliver both a social and a financial return should be acknowledged. Moreover, they are expected to offer better asset quality, higher net interest margins and higher operating expenses than banks in emerging markets (O'Donohoe et al., 2009, 33).

Therefore, in the field of microfinance it makes sense to use several valuation approaches in parallel to ensure a reliable result. For example, book values can be used to validate calculated terminal values (used in the DCF approach) (O'Brien, 2006, 283).

6.1.4 CLOSED-END FUNDS

When it comes to the assessment of fund performance, another important distinction is open-end vs. closed-end (SICAF) structure. In contrast with open-end funds, closed-end funds have a limited number of shares available for trade on a secondary market (Lückoff, 2011, 67). The price of a closed-end fund share usually fluctuates around its NAV, according to supply and demand. Closed-end funds often trade at a discount to

[65] e.g. SKS Microfinance, Compartamos.

their NAV (Lückoff, 2011, 68; Sharpe et al., 1995, 814)[66] and therefore, their NAVs do not necessarily represent their performance as prices can vary from NAV development. In order to calculate the performance of the fund based on its NAV, it is necessary to make a distinction between capital contributions by shareholders and realised and unrealised gains on the portfolio.

Due to the lack of a secondary market in microfinance, closed-end funds are rather illiquid vehicles and the investment style is buy-and-hold (UBS (ed.), 2008, 5). However, when comparing publicly traded closed-end funds to open-end funds the possibility of the closed-end funds being traded on a secondary market needs to be considered. Secondary market trading results in a return regardless of the development of the NAV as performance is then calculated based on share prices instead.

For the index calculation in this paper I only include closed-end funds that provide performance information representing the development of their portfolio (NAV).

Several microfinance funds that are closed to new investors are not to be confused with closed-end funds. Open-end funds face a liquidity risk as investors can channel more money into the fund; the resulting liquidity service is costly for the fund (Lückoff, 2011, 52). When there is excess liquidity that cannot be placed, funds try to overcome this risk by temporarily or permanently closing to new investors.[67]

6.2 *SOCIAL PERFORMANCE*

In order to assess social performance, a MFIF usually takes the social performance of the underlying portfolio into account. The funds evaluate the outreach (see Chapter 3.3) of the MFIs, in which they are invested, and calculate their own outreach based on the proportion of their assets within each MFI.

Even though the results are quantitative values, they are typically displayed only within a table in the social performance report (see Figure 6.1). Usually the information on outreach is published as the total number of borrowers and savers, average outstanding credits and savings, estimated number of family members served and percentage of

[66] This discount of closed-end mutual funds has been subject to many research studies, see for example Dimson / Minio-Kozerski, 1999.

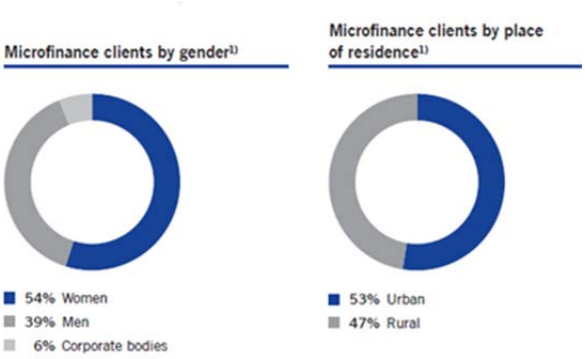
[67] For example responsAbility momentarily closed the Global Microfinance Fund to new investors in 2010 (responsAbility (ed.), 2010).

rural / female clients. To date, there is no index or similar figure representing the combined social performance of the funds. Moreover, as seen in the example of responsAbility (see Figure 6.1), some funds report total figures for all MFIs. This means that for the example of responsAbility, the table includes all MFIs that the fund is invested in, not accounting for the percentage of responsAbility's investment. If another fund serves the same MFI, both MFIFs include the same outreach data in their social performance reports. As some funds only refer to the percentage share of their investments in a particular MFI, different funds' outreach measures are difficult to compare.

Figure 6.1 Social Performance Report by ResponsAbility

Social performance indicators	Dec. 10	Dec. 09
Total number of borrowers of MFI, in million	16.0	11.4
Total number of savers, in million	7.6	6.3
Outstanding MFI credit portfolio, in USD million	16,589	14,083
Total clients' savings managed by MFIs, in USD million	8,889	6,621
Average outstanding credit per borrower, in USD	1,942	2,083
Average savings, in USD	1,123	1,360
Number of people employed by MFIs[1)]	64,385	85,976
Number of microfinance clients serviced	694,367	548,121
Estimated number of family members serviced, in million[2)]	3.5	2.8

1) Figures based on information from MFIs
2) Projections based on number of microfinance clients serviced; data from World Bank, UNDP and own assumptions



Source: responsAbility (2011a).

Three other criteria can be taken into account to better evaluate the social mission of a MFIF. While some funds only state financial information, others provide their investors with detailed information on ESG factors. In addition, two sets of principles have been adopted and are implemented by several funds:

- Client Protection Principles (smart campaign)[68]
- UN Principles for Responsible Investment (UNPRI).[69]

Considering the willingness to sign such principles, helps to rate the social awareness of MFIFs explicitly, while outreach measures explain the social attitude of the underlying MFIs. The outreach measure is useful, as MFIFs choose their investments by analys-

[68] See Table 12.1 in the Appendix.
[69] See Table 12.2 in the Appendix. In 2012, the PIIF (Principles for Investors in Inclusive Finance) emerged and as of April 2012, over 1,000 investment institutions became signatories (www.unpri.org). Nevertheless, at the time the survey was distributed, the UNPRI were applied by the MFIFs.

ing social factors, but applying the criteria defined above, helps to underline their strategy further.

It is important for MFIFs to make their social involvement clear, particularly since the recent microfinance crisis, which unsettled investors (Urgeghe, 2011, 3). On the subject of the presentation of their social approach, microfinance funds can learn from the experience of the broader socially responsible investment sector (Urgeghe, 2011, 3).

To date, still most social performance tools focus on MFIs rather than MFIFs, and there is a trend towards the elaboration of in-house methodologies by funds to assess social performance (Choi, 2010, 7). One example of a fund-specific social performance reporting system is the so-called "rADER (responsAbility Development Effectiveness Rating)" by responsAbility, which covers the following five dimensions of the MFIs which they have invested in (responsAbility (ed.), 2011b, 11):

- mission and objectives of MFIs
- products and services
- operational systems and processes
- access to financial services
- contribution to local economic development.

While these measurements are interesting for the special case of responsAbility, a comparison to other MFIFs is not possible.

To summarise, to date no standardised approach exists to collect, calculate and disclose social performance measures. Moreover, no rating agency combines both financial and social return in their calculation methodology (Urgeghe, 2011, 6).

The MIV disclosure guidelines by CGAP try to overcome this lack of comparability by improving reporting practices of MIVs with respect to social performance factors (GGAP (ed.), 2010a, 24). Indicators for the three categories Environmental, Social and Governance are presented and described in detail in order to ensure comparability among MIVs. For the factors "number of clients served", "percentage of female borrowers" and "average loan balance", strict guidelines are included in that those numbers need to be calculated based on the directly financed portfolio of the respective fund. The other requirements probably represent too much detail, as they sum to more

than 20 indicators and the social performance reports of MIVs to date do not include them in a consistent manner.

De Corte et al. (2011) try to aggregate different approaches to measure social performance using a MACBETH (Measuring Attractiveness by a Categorical Based Evaluation Technique) approach. The aim of the model is to assess how far MIVs reach their objectives regarding social and financial return. The authors elaborate procedures to overcome the methodological difficulties of measuring and aggregating multiple social performance criteria. The formulation of a unit to measure social performance of MIVs is the target of the analysis. The MACBETH approach consists of a set of processes to assess multiple criteria. While their approach is very interesting and important, to date only a working paper is published and the technique was so far only tested using one fund manager based on debt investments (de Corte et al., 2011, 31).

6.3 CALCULATION OF MICROFINANCE INVESTMENT FUND INDEXES

6.3.1 METHODOLOGIES FOR INDEX CALCULATION

When assessing the risk and performance of a given investment, potential as well as existing investors rely on established indexes. An index describes a measure that combines the development of a universe of objects over a time frame. Such indexes are usually calculated by adequate techniques of aggregation or averaging (Fahrmeir, 2003, 548). Indexes for benchmarking need to be appropriate to build a constructive tool for valuing investments. In the case of investments for which there is no related benchmark, fund managers and investors must rely on the asset class that is perceived to be closest (De Sousa-Shields, 2007). Appropriate indexes are mostly chosen according to regional factors, currency and, if available, specific characteristics such as for example the industry.[70]

To be considered as a meaningful benchmark, an index should fulfil certain requirements. According to Bailey (1992), the following characteristics are important for benchmarking a given fund manager's actions among others:

[70] For example MSCI China for funds investing in China or Nasdaq Biotechnology for funds invested in biotech.

- no ambiguity (names and weights of securities in the index should be clearly specified)
- measurability (calculation of the benchmark at least monthly)
- appropriateness (consistency with the manager's investment style)
- reflecting current investment options (the securities used within the benchmark should be well-known by the managers).

Ideally a microfinance index should represent the whole microfinance universe accurately. However, in microfinance, some funds are too young or too small and too unfamiliar to be attractive to investors. Excluding these funds leads to a limited but (from an investor's point of view) probably more reasonable fund universe.

Existing SRI benchmarks are assumed not to be reasonable for microfinance, as they use a broader investment approach. SRI is comparable with regard to the social component of return, the young age of the industry and the relatively little that is known by investors about different types of possible investments. However, SRI is not useful at a detailed level, as performance and valuation techniques cannot be compared with microfinance.

Other than SRI, emerging market benchmarks such as the JP Morgan Emerging Markets Bond Index (EMBI) are often believed to be useful. However, MFIFs do not invest directly in emerging markets in the way that funds included in the JP Morgan EMBI do by buying government bonds. Moreover, the JP Morgan EMBI focuses on large emerging countries (e.g. Argentina, Brazil and Mexico) rather than small development countries whereas MFIFs are usually broadly diversified in all types of developing countries (Heilmann, 2010, 26). The JP Morgan ELMI+ index[71] could offer a better opportunity as it reflects currency volatility in emerging countries. However, it still fails to provide perfect benchmarking because MFIFs are more influenced by the evolution of the portfolio they have invested in than by currency up- and downturns.

[71] The Emerging Local Markets Index Plus (ELMI), produced by JP Morgan, tracks total returns (in USD) for local-currency-denominated money market instruments in 23 emerging markets (King, 2008).

A fund index for microfinance investments differs from stock or bond price indexes because the funds are not traded and consequently no prices are available.[72] As elaborated in Chapter 6.1, performance is therefore measured using net asset values.

The basic formula representing an index is the following:

$$R_{Index} = \sum_{i=1}^{N} w_i * R_i$$

where:

w_i = *Weight attributed to fund i*

R_i = *Return of fund i*

There are different ways to calculate the weight (w_i) attributed to each fund within an index. The most commonly used methods are "equally weighted" and "asset-weighted" (Lhabitant, 2008, 489; Reilly / Wright, 1997, 134).

If all the funds included are equally weighted, the average of the index is recognised as the "average fund behaviour", independent of the assets under the management of each fund manager. In contrast to equal weighting, taking volume into account results in a minor impact of the smaller funds on the index. The weight of each fund within the index is based on its assets in relation to the total volume of all funds considered.

The asset-weighted methodology is preferred in many industries as it reflects the performance of the average dollar invested in the industry (Lhabitant, 2006, 489). However, the largest vehicles or companies included in the index may have extreme impacts on the index if the sizes of the vehicles included are not comparable. One example where capital weighting could be criticised is the Swiss Market Index (SMI), which is greatly influenced by the performance of the biggest players Nestlé, Novartis and Roche (SIX Swiss Exchange (ed.), 2011, 3). In microfinance this criticism may also be appropriate as a small number of funds reflect large parts of the whole industry.

For the asset-weighted methodology, comparable to price indexes, different approaches for weighting can be applied. The two best-known methodologies are the Laspeyres

[72] See S&P Dow Jones Indices (2013) for Corporate Bond Indexes, S&P Dow Jones Indices (2009) for Home Price Indexes or Dow Jones Indexes / Credit Suisse (2012) for Core Hedge Fund Indexes.

and the Paasche price indexes. Both indexes use prices and quantities of goods to display price development. The Laspeyres index uses a weighting technique based on the quantity measure in the base period whereas the Paasche price index focuses on the current quantities (Fahrmeir, 2003, 549).[73]

In general, transparent methodology for index calculation, weighting and the list of the funds included is very important. For example, it is essential to clarify whether the index only includes funds that are currently investable and open to new investors.

Excluding funds that are closed to investors from the analysis would result in a limited picture of the investment universe. Thus, the question of whether to include or exclude closed funds is not easy to answer, but when calculating an index it is important to clarify and communicate the decision on this question (Lhabitant, 2006, 489). In microfinance, it is reasonable to include both closed and open funds in the index, as the sample is not large enough for exclusions.

6.3.2 EXPENSES AND FEES

Expenses and fees are important when analysing funds, especially when different funds are compared. The total expense ratio combines all of the expenses charged to an investor. In microfinance, TER varies a lot between diverse fund styles. Structured debt funds report the lowest TER, while equity funds are the most costly ones (Symbiotics (ed.), 2012a, 79). The reason for higher costs associated with equity funds is the complex investment process, which often requires an active position, such as a seat on the board of the MFI. In general, microfinance funds have TERs that are competitive with other funds, which is interesting in view of their high transaction costs and low average transaction sizes (Symbiotics (ed.), 2011, 24).

NAVs are calculated after the deduction of direct expenses and fees (see for example responsAbility (ed.), 2011a, 13). When analysing fund performance from the investors' point of view, looking at performance after fees charged by the fund is accurate. However, for other analyses, such as the evaluation of fund managers' strategies, it is better to compare returns before fees and expenses, otherwise, a fund manager could outper-

[73] The Laspeyres index therefore reflects the absolute change in prices in relation to constant quantities (Fahrmeir, 2003, 550); nevertheless for the present analysis on fund performance without price information, the application of the Laspeyres methodology will not reveal price changes.

form others simply because lower fees and expenses are charged. This paper takes the investor's perspective and therefore expenses and fees are deducted before performance is analysed.

Instead of charging fees, some funds trade with an agio. This makes buying prices higher than selling prices and the difference between the two represents the charges. When comparing these funds with other investment vehicles, the focus should be either on selling prices or on buying prices throughout the whole period in order to reveal the true performance of the fund.

In addition to these usually reported expenses, the investor can be charged so called transaction costs or load charges, especially if an external sales force is engaged (Sharpe et al., 1995, 801). These commission rates are not usually disclosed and therefore not considered in the index calculation.

6.4 *EXISTING INDEX SYMBIOTICS MICROFINANCE INDEX*

At the beginning of 2005, Symbiotics, a specialised microfinance investment manager and data provider, started the calculation of the so-called "Symbiotics Microfinance Index" (SMX) with the aim of providing a benchmark for assessing returns and their inherent volatility (Symbiotics (ed.), 2005, 2). Symbiotics calculates two indexes: one for investments in debt and one for equity.[74] The debt index focuses on the performance of MIVs. Besides the standard requirements for a fund to be classified as a microfinance investment, a vehicle is only included in the index if monthly valuations are available, the currency is Euros or US Dollars and the fund is certified with a valid ISIN-indication.[75] However, the number of public MIVs disclosing information on risks and returns is small and Symbiotics' data is limited to the funds that they manage. Apart from this limitation, the index has other shortcomings:

- small number of observations and no justification for in- / excluding funds
- equal weighting of all funds
- no regional split available
- missing classification of different structures and investment policies
- no consideration of social impact.

[74] For debt investments, three indexes are calculated: USD, CHF, and EUR.
[75] International Securities Identification Number (ISIN).

For equity funds, Symbiotics uses the performance of the five largest publicly traded MFIs[76] to calculate the SMX equity index, which leaves the investor with a very limited picture of the market. Five institutions is a small number, as most funds invest in more than five targets. In addition, the performance of institutions does not necessarily reflect the performance of funds: more factors such as dividends and distributions and the quality of the fund management need to be taken into account. Furthermore, a biased picture of the market results when only publicly traded MFIs are considered, as the vast majority of MFIs is not listed.

The above-mentioned shortcomings of the two existing benchmarks provide the motivation for the present research on MFIFs. The ideal result would be an optimised index, including large parts of the whole microfinance market, considering special characteristics, social factors and regional distribution of the assets. However, data restrictions to date pose a challenge to this objective, especially regarding social factors. The major limitation of the Symbiotics index is the restricted picture of the market and the lack of independence as the funds considered for the index calculation are all managed by Symbiotics. Moreover, the SMX probably overestimates the average return in the microfinance industry, as the funds managed by Symbiotics tend to be rather well established commercial vehicles. Furthermore, funds managed by the same company might perform similarly and not reflect the industry. The index proposed in this analysis overcomes this shortcoming of the SMX by being open to all existing funds.

[76] Bank Rakyat Indonesia, Equity Bank, Banco Compartamos, Brac Bank Limited, SKS Microfinance.

PART III EMPIRICAL STUDY

7. DATA SELECTION

7.1 DATA SITUATION

Obtaining detailed information on the performance and operations is challenging for most MFIFs due to their private structure. On the other hand, as MFIFs are not allowed to advertise in most markets, it should be of their interest to be included in databases so that they have a chance of being spotted by consultants and investors.[77] Approaches exist to facilitate public access to information on MIVs, such as the MIV disclosure guidelines elaborated by CGAP (see Chapter 5.4). Still, the information available depends strongly on the willingness of funds to provide data, as the disclosure is voluntary. For some funds, even the fund manager's contact data is treated as proprietary information. This situation is reminiscent of the hedge fund market around 2006, when performance and risk data were difficult to obtain there, too (Lhabitant, 2006, 404). Regulation of the vehicles is minimal and a fund manager's interest in disclosing financial information is limited as growth targets can largely be met by serving high net worth individuals and institutional customers. Most regulators do not allow MFIFs to advertise their services to the general public. The disclosure of past performance data, especially if positive, could be interpreted as advertising and is thus avoided by fund managers. Another handicap to transparency is the fund managers' fear of revealing their strategies to competitors. Again, this situation is highly comparable with the beginning of the hedge fund industry (Lhabitant, 2006, 404).

7.2 OVERVIEW OF APPROACHES ON DATA GATHERING

In 2006, the newly established non-profit organisation *Luxflag* started to specialise in labelling funds that invest mainly in microfinance. To date, 24 funds carry the Luxflag-label (LUXFLAG online, 18.05.2012). This label aims to help investors when choosing securities, by enhancing the visibility of particular MIVs.[78] The label reassures an investor that the MIV actually does invest large parts of its assets in microfinance and each vehicle's practice is examined annually in order to ensure that it meets interna-

[77] A similar situation was observed in the beginning of the hedge fund industry (Lhabitant, 2006, 479).

[78] LUXFLAG is an independent and non-profit making institution based in Luxembourg, similar to Novethic, an independent body labelling SRI funds (see http://www.novethic.com).

tionally recognised standards (LUXFLAG online, 18.05.2012). To date, the Luxflag-label is the only certification possibility for MIVs.

Symbiotics offers several data packages on www.syminvest.com. Information is available on MFIs and MFIFs, as well as indexing for both institutions and funds. However, Symbiotic's data packages on individual funds are limited to annual snapshots. While they do provide benchmarking between MFIFs, these are only based on five to seven funds, depending on the currency.

In 2012, a beta version of the specialised MIV-platform *Luminis* was released, which provides factsheets of fund information (www.luminis.com). This overview only extracts basic fund-specific information for 80 funds using data from 2010. In May 2012 Luminis announced that 22 funds agreed to undergo the so-called Luminis PRSM process (analysis of performance, risk, social factors, and management). On May 10th 2012 Luminis advertised the start of the official online data service on their website. Data packages are offered on between 10 and 23 funds, and a fee is charged online. Once again, however, quantitative data are only provided on an annual basis, and no detailed history is available.

MIX is well known for providing relatively meaningful data on MFIs and is also compiling information on MFIFs. As MIX focuses on MFIs, data on funds are not timely nor do they include large parts of the fund universe. However, MIX provides a large database for the analysis of the underlying portfolio of MFIFs.

One-year figures are not sufficient for comparing different funds or evaluating them in the context of other asset classes, particularly with regard to performance. In order to gain more data points, a comprehensive study that includes all MFIFs or at least all funds willing to disclose information is conducted. In the present analysis, quantitative measures are complemented with portfolio information (MFIs) such as legal status and regional distribution and the interaction between financial and social return.

7.3 DATA FROM SURVEY

7.3.1 STRUCTURE OF SURVEY

Due to the lack of availability of disclosed data, a questionnaire was elaborated and distributed to 104 fund managers in October 2011. The aim of the survey is to gather informative data on fund structures, portfolios and performance.[79] With the exception of few questions, the survey does not collect subjective data such as fund managers' opinions or estimates.

Table 7.1 Content of the Questionnaire[80]

Part	Content
General Information	Investment Type Target Return / Benchmark Expenses Investment Objective
Portfolio	Total Assets Debt / Equity/Guarantees / Liquidity Direct / Indirect Investments in Microfinance Diversification Regions Portfolio Quality Currencies
Social Performance	Number of Clients Served, Average Loan Size Female / Rural Clients Client Protection Principles UNPRI Provision of ESG Information to Clients
Financial Performance	Net Asset Values and Return Since Inception

Source: own research.

The survey consists of four main parts and is distributed in the form of an Excel spread sheet including visual basic applications, in order to facilitate data input by participants. The first two parts are based on the results of the approach to classification developed for this project, which attempts to capture all the characteristics of the funds. The third and fourth parts focus on the collection of data regarding social and financial return (see Table 7.1). The Excel spread sheet was distributed accompanied by an E-

[79] The Center for Microfinance aims to continue the analysis by publishing the calculated index on the website and therefore, the survey was distributed in early 2013 again.

[80] Print screens of the survey that was distributed are available in the Appendix (Figure 12.2).

mail explaining the aim of the study and assuring confidential treatment of the responses.[81]

7.3.2 *FEEDBACK FROM SURVEY*

The survey was distributed to all MFIFs found online (MIX and others) and in surveys conducted by CGAP and MicroRate. Some fund managers are responsible for several funds, including for example representatives of BlueOrchard, ResponsAbility and Deutsche Bank. From the information found online it was not always possible to determine whether a vehicle is organised as a fund, a structured product or a company, and so the structure of the 104 targets is diverse. I distributed the survey by the end of October 2011 with a deadline of November 30, 2011. The first reminder was sent in December 2011 and a second one was distributed to funds that are considered to be particularly important in January 2012. Following this second reminder, an attempt was made to reach the fund managers by telephone. The reactions of fund managers were diverse: some refused to participate in the survey due to internal disclosure restrictions; some funds were willing to elaborate a fund-specific non-disclosure agreement (NDA), which helped to overcome certain restrictions. However, even after the provision of NDAs, some funds did not fill in all the information requested. Performance information, in particular, is not provided by all of the participants. Of the total of 104 funds contacted, 28 returned a survey, which represents a response rate of approximately 27%.

The final response rate exceeds expectations[82] and may be a reflection of strong interest in the research among fund managers due to the overall low transparency in the market. Making continued efforts to contact fund managers personally and talking to quite a large number of them in person might also have increased the response rate, as did making contacts at workshops and conferences. The 28 participating funds will receive an exclusive overview of the results of the survey after publication.

For the calculation of the index, only funds that provide monthly performance data were included, and unfortunately not all participating funds were able or willing to

[81] By means of a detailed Internet search I compiled an address list of fund managers, enabling most of the e-mails to be addressed to the recipient by name.

[82] I expected a very low return rate because financial information, especially for private funds, is confidential from a fund manager's perspective.

disclose such detailed data. Interestingly, monthly performance information is only provided by open-end funds that focus on debt investment. As a result, it is not possible to calculate an index for equity investments.

From the surveys received, 20 funds provide performance data of which 13 on a monthly basis. For the calculation of an index, accounting currencies need to be differentiated. All the funds that provide performance information use either US Dollars or Euros. In order to complete the picture, performance data for six funds are retrieved from Bloomberg[83] resulting in a total of six US Dollar based funds and 13 Euro based funds (see Table 7.2). All information received from fund managers is kept strictly confidential and published only in an aggregated form.

Table 7.2 Data Overview

Description	Number of Funds
Surveys distributed	104
Respondents	28
Providing Performance Information	20
Performance on a monthly Basis	13
Data in US Dollar	5
Data in Euro	8
Data from Bloomberg (US Dollars)	1
Data from Bloomberg (Euros)	5
Total Funds for Index Calculation US Dollars	**6**
Total Funds for Index Calculation Euros	**13**

Source: own research.

7.3.3 POTENTIAL SOURCES OF ERRORS

7.3.3.1 MISSING DATA

When using a questionnaire, several issues concerning data quality must be taken into account. Missing data occurs because:

- fund managers do not participate (unit non-response)

[83] Data from Bloomberg are only financial returns, therefore the seven funds providing data in Bloomberg are only included in the index calculation and not in the qualitative analysis.

- fund managers ignore some questions (item non-response).

For both types of non-response the missing data could be completely at random (MCAR), at random (MAR) or non-at random (MNAR). For a MNAR, the missing data would result in a bias within the data set (Göthlich, 2007, 120 ff.). However, in the present paper, data are used only in a descriptive manner and for index calculation. In the descriptive analysis, missing data are explicitly discussed whereas in the calculation of the index, only funds that provide performance data on a monthly basis are integrated. It is possible for biases to emerge in the index if fund managers with poor performance quality omit the section on performance collection intentionally. This latent bias in the calculated index is addressed separately in the next section.

7.3.3.2 SOURCES OF BIAS

When collecting performance data by means of a questionnaire filled in by fund managers themselves, there are several sources of bias that can occur and must be addressed. Equal problems arise for databases that are collected in the same way, because no generally accepted data sources, such as audited annual reports, exist (Lhabitant, 2006, 479 ff.).

As private investment pools, MFIFs are not required to disclose performance data to the public, and therefore, the number of funds that explicitly provide researchers with information will not be a truly random sample of the general population (*self-selection bias*) (Lhabitant, 2006, 481). Furthermore, a fund manager can decide what kind of information to reveal. Therefore, performance data may be positively biased as fund managers with poor performance might not agree to disclose information voluntarily. On the other hand, well-established and profitable funds might not wish to participate, as they do not need to acquire new customers. When it comes to the calculation of indexes, they would prefer not to be included, as their inclusion would raise the performance index and make their own fund look less profitable in comparison (Lhabitant, 2006, 481).

Self-selection bias could therefore have either a positive or a negative influence on performance measures collected by means of a survey. In the special case of microfinance, it is easier to gain access to information on larger and more commercial funds. There-

fore, it is possible that the performance data received in the survey outperform the industry average.

If funds hold illiquid securities or assets that are difficult to price, the valuation is challenging, as no information on regular effectively traded prices is available leading to an "*infrequent pricing and illiquidity bias*" (Lhabitant, 2006, p 485). Furthermore, most MFIFs value their portfolios themselves. The involvement of third-party administrators would provide investors with a more realistic and neutral picture (Lhabitant, 2006, 481). Finally, the short history of some funds could pose a problem, particularly as the financial crisis of the last few years might hinder a meaningful depiction of the industry.

7.4 DATA FROM MICROFINANCE INFORMATION EXCHANGE

The second empirical analysis on the relationship between financial and social return is conducted using data on MFIs rather than MFIFs. Despite the fact that MFIFs improve their social performance measurement tools and start to disclose them in the social performance report (Chapter 6.2), more data are available on MFIs.

Data on MFIs used are included in a special data package, which provides a unique and very comprehensive picture of the microfinance market.[84] Data are converted into US Dollars at contemporaneous exchange rates and closely monitored by MIX. Participating MFIs are required to disclose detailed information on their performance such as financial statements and annual reports. However, data retrieved from MIX are always subject to the possibility of bias as MFIs report their data themselves and on a voluntary basis. MFIs participating in the MIX must assume some potential benefit from the disclosure of their data, such as gaining the interest of investors and being included in research analyses. It is therefore likely that some of the more commercially orientated banks are under-represented in the database. MIX does not check the reliability of each participating MFI although it undertakes some adjustments to make comparison easier such as correcting for inflation, loan loss provisioning / write-offs and subsidies (MIX (ed.), 2007, 71). Data collected by MIX on MFIs are credited with being the best available representation of the MFIs in the whole microfinance industry (Krauss / Walter, 2008, 11; Di Bella, 2011, 16; Hartarska / Nadolnyak, 2007, 1212). However, as the data

[84] The data package was purchased by the Center for Microfinance from MIX in early 2012.

quality of the MIX database has often been criticised, MIX started to use so-called diamonds, a rating system on a scale of one to five to indicate the reporting quality and completeness of MFIs. A MFI receiving five diamonds publishes audited financial statements on a yearly basis accompanied by a rating or due diligence report.[85] To ensure that the regression results are not biased by MFIs with bad reporting standards or missing information, only MFIs with 5 diamonds were included.[86] The resulting data file includes 1,508 observations between the years 2004 and 2010 for the purposes of the regression analysis (see Table 7.3). However, to show a more complete picture, I repeat the main regression also using all MFIs rated from one to five diamonds and show the results in the Appendix.[87]

To capture the effect for investors, additionally special data on funding of MFIs is analysed. This data is newly collected by MIX since 2007 and has so far not been subject to many research projects.

Table 7.3 Composition of Data File

Year	Number of MFIs
2004	138
2005	180
2006	235
2007	259
2008	271
2009	250
2010	175
Total	**1,508**

Source: own research.

[85] Four diamonds means that audited financial statements are available with lack of rating/due diligence. An institution receiving three diamonds needs to have an active profile (one diamond), some data on clients and products for the year (two diamonds) and some financial data for the year (see http://www.mixmarket.org/faq/diamond-rankings).

[86] The decision to exclude all MFIs with less than 5-diamonds is taken because strange values reported by several low-diamond MFIs were discovered (e.g. percentage of female customers>100%). Additionally, MFIs reporting negative levels of leverage (18 observations) and one observation with a leverage of over 2,000 were excluded.

[87] The whole data file, including MFIs of all diamond ratings, is used for some descriptive analysis, especially regarding regions and countries in Chapter 8.

8. CLASSIFICATION OF MFIFS: RESULTS

8.1 CLASSIFICATION USING INFORMATION FROM SURVEY

8.1.1 GENERAL SURVEY RESULTS

The motivation for this paper is the lack of generally accepted benchmarks in microfinance. Interestingly, responses received from funds concerning their use of benchmarks are varied. Of the respondents, 29% say that they do not focus on a particular benchmark, while 11% use the money market and another 11% use the SMX as their benchmark. The remaining 50% focus either on LIBOR, or on 5-year term deposit notes or they do not reply to the question. These answers provide evidence that, to date, MFIFs have not been using a standard benchmark. Funds also vary in their approach to return targets as they focus on different proxies. Two funds state that their target is to achieve a return of 100 to 200 basis points above LIBOR. Three respondents focus on a return above the money market rate and two more base their targets on the rate of inflation, with one aiming to match it and the other to exceed it by 1%. The remaining respondents give their aims as a certain percentage of annualised return, with a wide range from 2-3.5% to 6-11% and even 13.5%. This huge range of responses reflects the different strategies of the funds regarding their financial performance. Funds aiming to achieve a high return are the private equity vehicles and the closed-end funds, which refer to the target return realised during their lifetime.

Questionnaire recipients are asked about the *management fees* charged and 75% responded, with answers ranging from 0% to 2.5% and one vehicle stating that the management fee is not defined.

With the exception of one fund that offers daily subscriptions, all the surveyed funds are rather *illiquid* vehicles for investors compared with publicly traded investment possibilities, stating subscription and redemption periodicities of at least one month. The redemption in particular requires investors to be patient. Some funds indicate redemption lock-in periods of a quarter year (four funds), half a year (three funds) or a year (two funds). In addition, many funds require minimum investments ranging from USD 20,000 to USD 250,000 at maximum. The total assets of all the funds considered amount

to USD 5,241 million, reflecting approximately 74.9% of the microfinance market evaluated by MicroRate in 2011 (see Figure 5.1).

8.1.2 *FUND STRUCTURE*

Building on the MFIF classifications described in Chapter 5.2, this Chapter defines the most important characteristics of the funds that participate in the survey. As none of the equity funds or the development funds disclose their performance data on a monthly basis, this group cannot be included in the index. Their survey data are still used to identify the part of the microfinance fund universe captured within the survey.

Regarding *commercialisation*, the majority of the funds claim to be either a commercial (13 responses) or a quasi-commercial (eight responses) investment vehicle. One respondent claims to be a social investor and six do not provide information. Interestingly, very few social investors or development funds replied to the survey. Furthermore, only commercial and quasi-commercial funds are willing to disclose financial performance. For this reason, it is not possible to base the indexing part in Chapter 9 on both commercial and development funds.

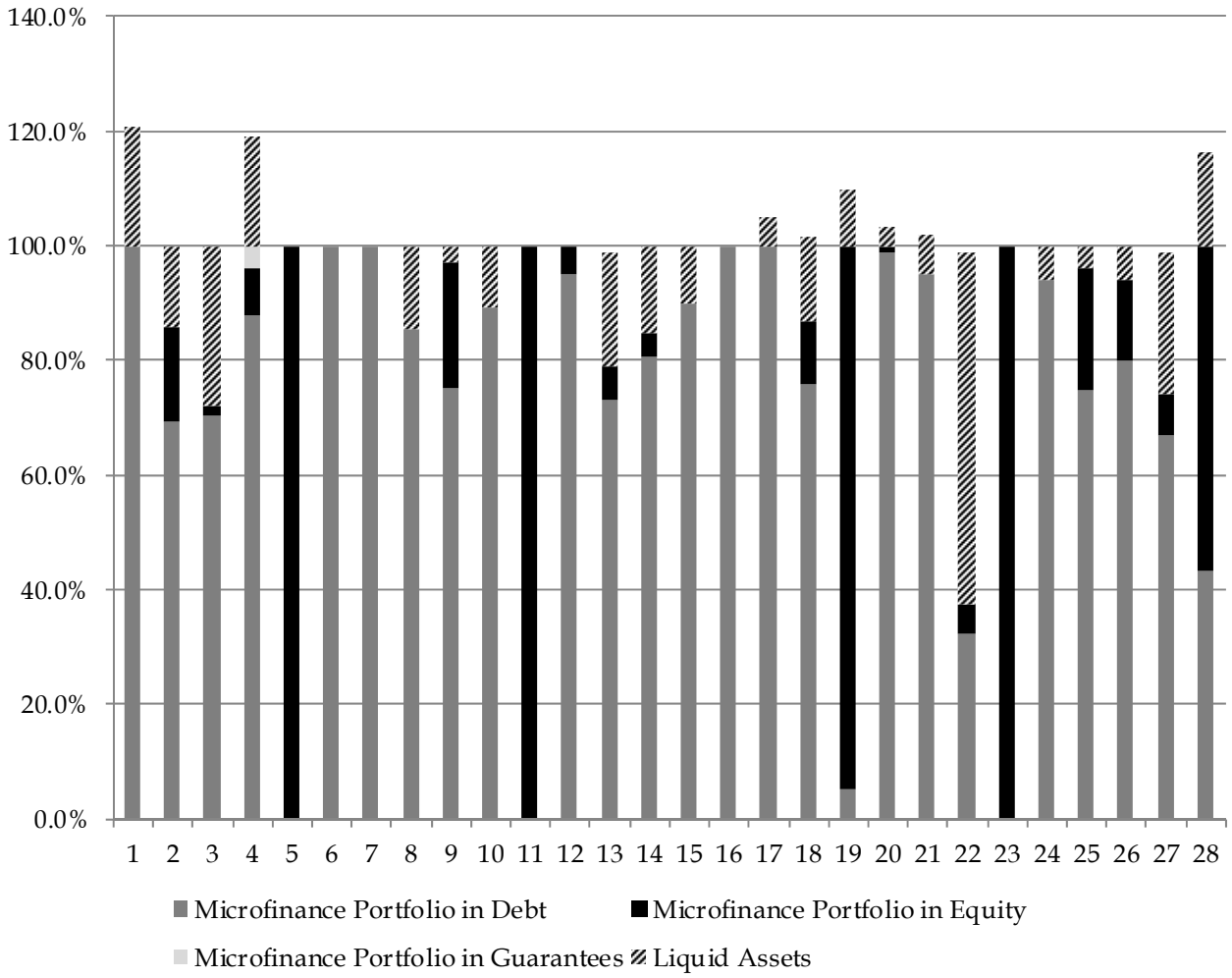
Five of the funds participating in the survey are classified as *public* funds by CGAP (2010b, 37).

The majority of funds replying to the survey are mainly invested in *debt*, with five funds reporting 100% debt investment. Four of the respondents are invested only or mainly in *equity*. Thirteen funds report a small proportion of *equity* of between 1 and 22%. Funds investing 75% and more in *debt* are treated as debt-funds and compared within one index. Some funds indicate a high proportion of *liquidity* within their portfolio, with a maximum of 61%. Eight funds report their percentage liquidity on top of their equity / debt investments rather than in relation to them, and their portfolios therefore sum to more than 100% (see Figure 8.1). Only two funds indicate a part of their portfolios in *guarantees*, although the amounts are small at 0.1% and 4% respectively.

The *total expense ratio* reported by 16 of the respondents ranges from 1.3% to 4%. Two funds report higher TERs of 8%, and 15.7%. The differences are, for the most part, explained by different structures, as would be expected. As only debt funds are consid-

ered for further financial analysis, distinguishing between different rates of TER is not necessary.

Figure 8.1 Fund Portfolios Reported in the Research Survey for 2010



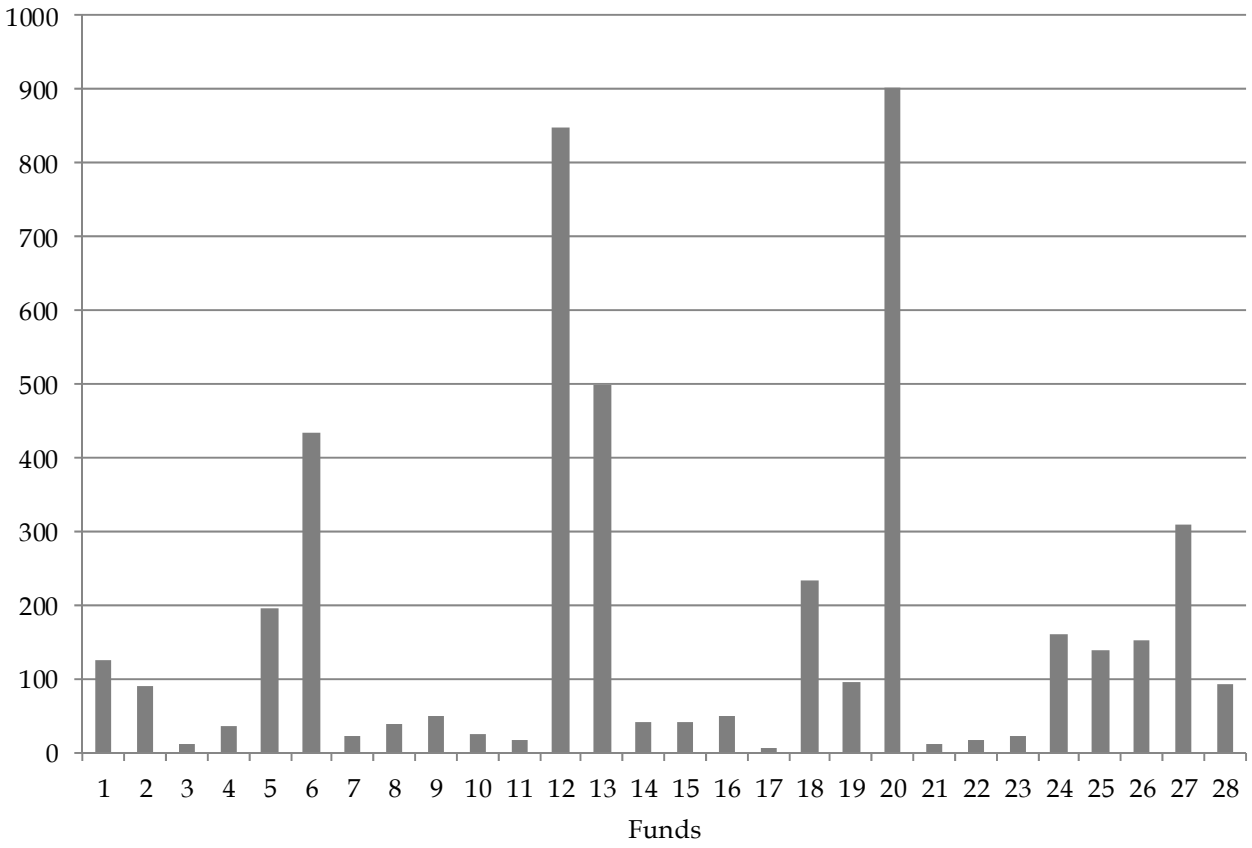
Source: own research.

8.1.3 FUND CHARACTERISTICS

Regarding the *investors* targeted, 18 funds claim to be open to public and private investors and involved in retail as well as targeting HNWIs. Four funds only target institutional investors and the remaining funds do not reply to this specific question. While it would have been interesting to analyse the financial performance of institutionally orientated funds separately, limited data availability makes this distinction impossible.

The funds vary greatly in *size*, measured as total assets converted into US Dollars using the contemporaneous exchange rate (see Figure 8.2).[88] The sample is dominated by two large funds whose total assets amount to more than twice that of the smaller funds. Seventeen of the 28 funds have total assets of less than USD 100 million. Of the funds that provide financial information on a monthly basis (including the funds retrieved from Bloomberg), the four largest funds account for 59% of all assets. The asset-weighted index calculated from these data needs to be reviewed critically due to the strong influence of these four funds.

Figure 8.2 Total Assets of Survey Respondents in USD Millions for 2010



Source: own research.

The average *age* of the responding funds is seven years with a wide variance that ranges from two to 37 years.

As expected, the more commercial funds invested in debt *hedge* a large percentage of local currency. Only two debt funds report a significant percentage of unhedged assets,

[88] Exchange rates were taken from www.oanda.com.

with 56% and 10%. Among the equity funds, four vehicles report larger unhedged portfolios in local currency, amounting to between 28% and 100%. However, as these funds do not provide financial performance data they are not included in further analyses.

Regarding *risk* and *diversification*, the number of funds investing large proportions of their assets in one country is very small, while eight out of the 28 funds claim to have more than 70% of their assets in the top five countries. Moreover, five of the funds have allocated more than 70% of their funds to the top five MFIs. As expected, private placement and equity funds are less diversified across countries and MFIs (CGAP (ed.), 2010b, 28; Symbiotics (ed.), 2012a, 79).

With respect to *social return*, data are collected on the application of two types of principles, on ESG information provided to investors and on four outreach measures. The investigation into the application of client protection principles and UNPRI shows that 13% of the funds do not subscribe to client protection principles and 24% are not signatories to UNPRI, while five and seven funds respectively did not reply to the question. Twenty-two funds state that they inform investors about ESG, while two say they do not and four fail to answer the question.

The outreach measures are, as expected, rather difficult to collect at the fund level because different funds provide information that cannot be compared with or added to others. Respondents add comments to their responses such as: "total number, served by all portfolio companies" or "figures related to direct MFI investment, MIV investments not included". It is therefore difficult to determine whether the funds disclose information on all the MFIs / MIVs they are invested in as a total or if they only account for the percentage they are actually financing at the time. This result shows that, to date, funds do not all disclose social performance factors according to the MIV disclosure guidelines introduced by CGAP in 2010 (see 6.2).

Nevertheless, a short descriptive analysis can be made and data is compared with MFI data from the 2010 MIX file. In total, 23 of the 28 respondents provide complete social performance information. On average, 1.7 million clients are served by the funds, with

a range from 7,000 to 15 million.[89] Regarding average size of the loans distributed, most funds only provide information on a total basis rather than in relation to GNI per capita. The average loan size amounts to USD 1,408 ranging from USD 130 to USD 3,600. The mean loan balance per borrower distributed by MFIs is very similar at USD 1,439 according to the MIX data file on MFIs, which includes 1,092 institutions for the year 2010.[90] On average, the funds serve 64.7% female and 49.1% rural clients. Interestingly, all funds claim to serve at least 50% female clients, with a minimum of 50.3% and one fund operating almost exclusively with female clients at 98.3%. The set of 996 MFI observations in 2010 shows an average of 64.8% female customers, almost the same as the funds that participate in the survey. The distribution of rural clients is between 22% and 71.6%. There is no data on rural clients in the MIX data file, so it is not possible to compare the surveyed funds with the MFIs.

8.2 *Legal Status of the Underlying Portfolio*

The effect of the legal status on performance and risk of MFIs is analysed using a cursory approach, as investors do not usually have information on the legal structures of the MFIs on which the fund is focusing. Furthermore, funds do not provide detailed information on the structure of their target MFIs in the survey. Regarding the target MFIs, 19 (68%) of the participants claim to focus on MFIs that are profitable or approaching profitability when choosing investments. Only two responses specify their investments in Tier 2 or Tier 3 or mention more socially orientated MFIs as their targets. Three participants did not reply to the question and four did not clearly specify their target MFIs.

Fund managers use information on the legal status of MFIs to make decisions on potential investments. The MIX database is used for the analysis of legal status, including unweighted averages from the years 2004 to 2010, with the focus on two measures of financial returns (ROA and ROE), one efficiency measure (operating expenses divided

[89] The results on number of clients reached need to be interpreted with caution as numbers are possibly positively biased because some funds might provide the total number served by all MFIs invested in (rather than calculating their share). Therefore, number of clients is not compared to MIX data on MFIs.

[90] For this descriptive analysis I use the complete data file including all MFIs without respect to their number of diamonds.

by assets OPEXP), portfolio yield (nominal, YIELD) and a risk measure displaying the portion of the portfolio that is more than 30 days overdue (PAR30).

Portfolio yield is highest for NBFIs and NGOs and this result remains stable when each year is analysed separately (significant at the 1% level). This result is rather counter-intuitive as it indicates that NBFI and NGOs charge their customers higher average interest rates than do banks and credit unions / cooperatives. It could indicate that these institutions try to cover possibly higher expenses with increased interest rates. Supporting the results of Hassan / Sanchez in 2009, I find that rural banks, banks and credit unions / cooperatives (COOP) have lower operating expenses (significant at the 1% level) and thus higher efficiency than do NBFIs and NGOs (see fourth column of Table 8.1).

In agreement with Galema et al. (2011), rural banks (3.01%), banks (1.26%) and NBFI (1.31%) show the highest values of ROA. Nevertheless, these differences are not significant (except for the difference between rural banks and NGOs). The results for banks are influenced by negative performance in the years 2008 and 2009. Rural banks manage to show positive performance (measured as ROA) in all the years observed. Interestingly, the performance of NGOs also turned negative in 2008 and 2009; thus it appears that NGOs and banks are most affected by the crises.

Regarding risk, evidence shows the highest levels of PAR30 for rural banks (11.73%), significant at the 1% level in comparison with all other types of institutions. This result for rural banks contradicts the one of Tchakoute-Tchuigoua (2010), as the data do not indicate that private MFIs (microfinance banks or other non-banking financial institutions) have the best portfolio quality.

To conclude, the results indicate that funds focusing on efficiency should invest in banks and NBFIs rather than NGOs and credit unions / cooperatives. However, ROA measures do not vary between types of institutions to a significant extent. Furthermore, possible diversification effects might be reduced due to the correlation between microfinance banks and the global financial market. When focusing on social factors, such as percentage of women served and average loan balance in relation to GNI per capita, NGOs (74.96% females and 32.25% ALB_GNI on average) perform best, while banks

perform worst (52.58% females and 161.75% ALB_GNI on average), both at a statistically significant level.

Table 8.1 Average Financial KPIs by Legal Status (2004-2010)[91]

Legal Status	Obs.[92]	YIELD (nom.) %	OPEXP %	ROA %	ROE %	PAR30 %	FEMALE %	ALB_ GNI %
Bank	428	30.68	14.57	1.26	16.91	5.78	52.58	161.75
COOP	743	25.03	11.88	1.13	50.16	7.56	50.70	91.49
NBFI	1,825	36.62	19.85	1.31	7.85	5.78	62.10	64.46
NGO	2,014	36.12	22.99	-0.06	6.32	6.81	74.96	32.25
Rural	330	30.10	11.91	3.01	17.00	11.73	51.60	50.26

Source: own research.[93]

8.3 *REGIONAL ALLOCATION*

8.3.1 *REGIONAL DISTRIBUTION OF FUNDS' ASSETS*

Even though the underlying portfolio of a fund is not often published in detail, most established funds provide information in their factsheets or monthly reports on the regional distribution of their assets. In the survey, 26 of the 28 funds provide information on the regional spread. The largest regions for investment are Latin America and the Caribbean (35% of assets) and Eastern Europe and Central Asia (27% of the assets) (see Figure 8.3).

MicroRate's 2011 survey also found 35% of microfinance assets invested in Latin America and the Caribbean. The share of assets invested in South Asia is rather higher in this sample at 16% compared with 7% in the MicroRate survey. Otherwise the regional distribution is quite comparable with MicroRate's larger survey (see Chapter 3.2).

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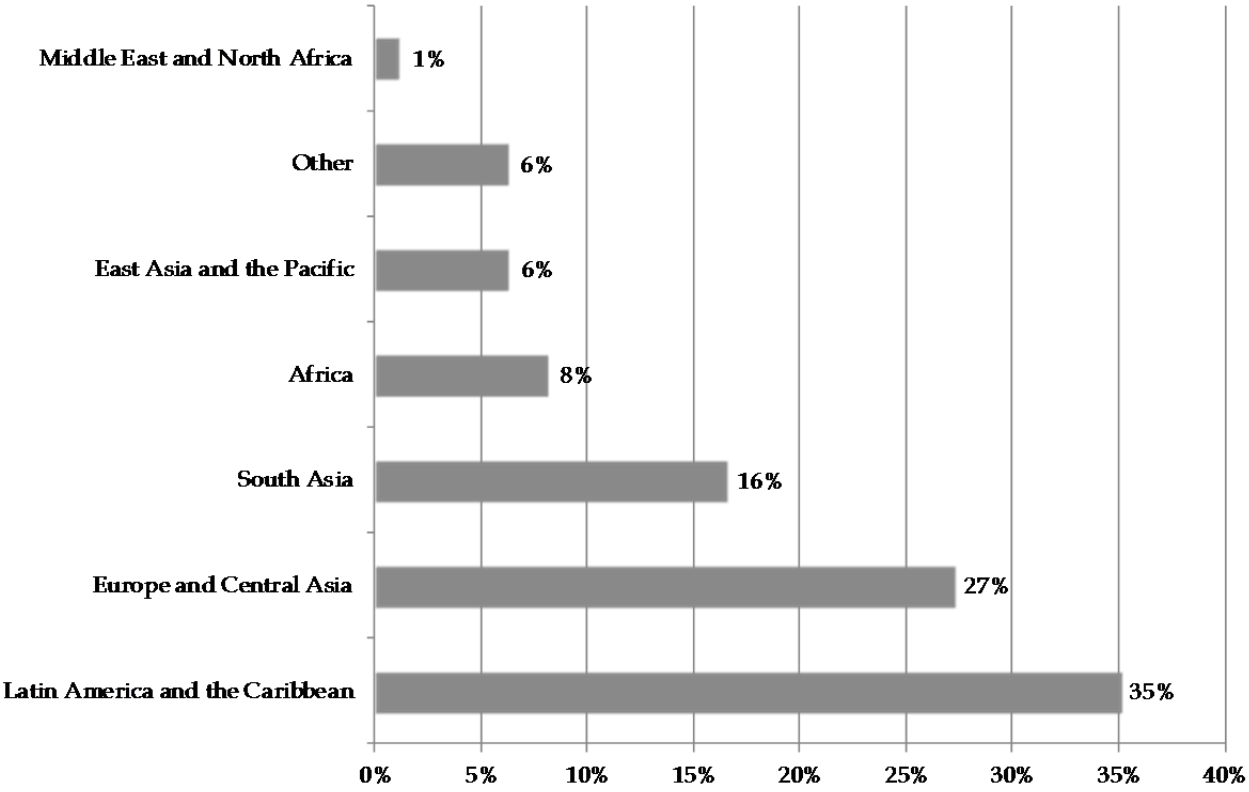
91 Anova analyses regarding the statistical significance of the differences in means (multiple comparisons using a one-way Anova analysis) are presented in the Appendix based on 5,431 observations (Table 12.3).

92 For the two social measures (female and ALB_GNI), the number of observations is smaller: 282 banks, 643 credit unions / cooperatives, 1,606 NBFIs, 1,846 NGOs, 212 rural banks.

93 The very high level of ROE for credit union / cooperatives is driven by four institutions reporting extremely high ROEs, amounting each to values of more than 1,000%.

Figure 8.3 Regional Distribution of Assets by Respondents 2010



Source: own research.

8.3.2 REGIONAL DIFFERENCES

I analyse the regional distribution of the MFIs from an investor's point of view, including information on financial return (YIELD, OPEXP, ROA), risk (PAR30) and social performance (average loan balance in relation to GNI, ALB_GNI). Six regions are differentiated in the data file provided by MIX, and in 2010, the percentage of MFIs in Latin America and the Caribbean is clearly dominant with 33%, followed by Eastern Europe and Central Asia with 19% (see Table 8.2). The graphical illustration presented here is accompanied by a one-way Anova analysis displayed in the Appendix (Table 12.4), which includes all observations (8,482) over the seven years.

Table 8.2 Regional Distribution in MIX Data File for 2010[94]

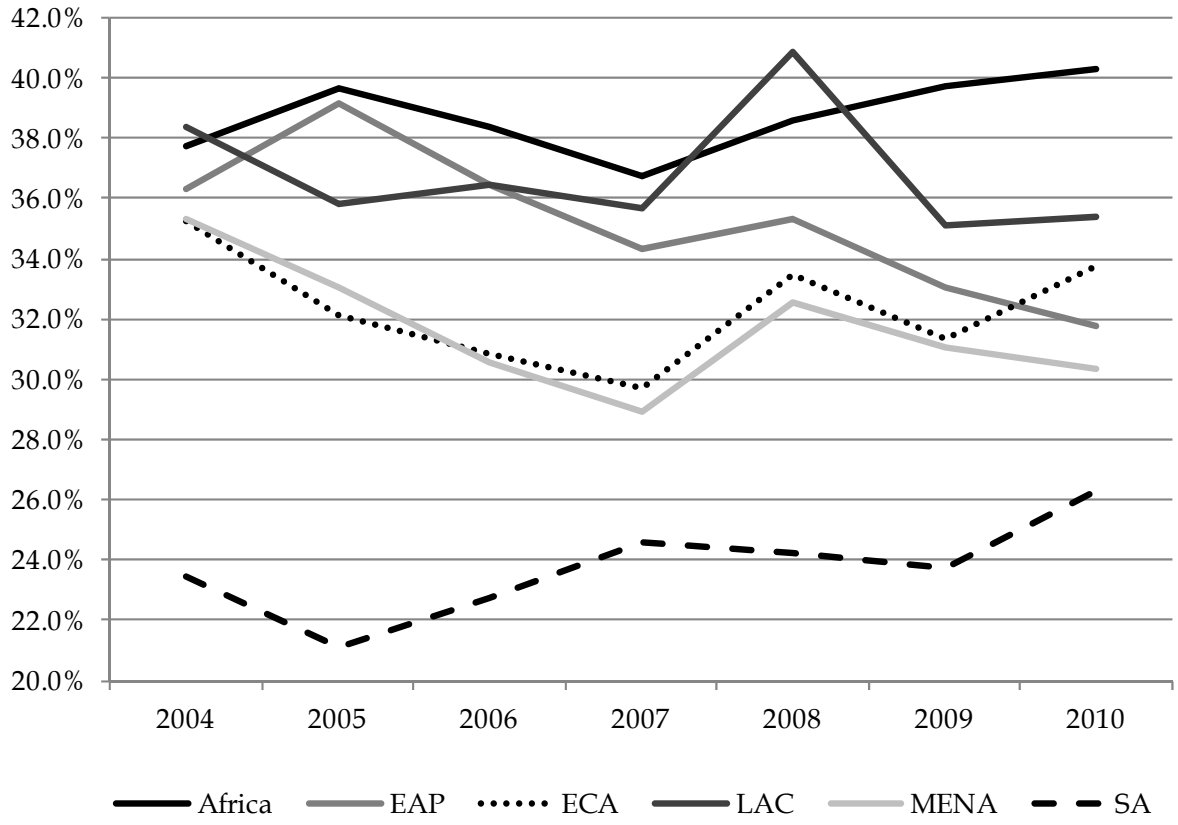
Region	Number of MFIs	Percentage
Latin America and the Caribbean	352	33%
Eastern Europe and Central Asia	202	19%
South Asia	193	18%
Africa	151	14%
East Asia and the Pacific	114	11%
Middle East and North Africa	62	6%
Total	**1,074**	**100**

Source: own research based on data from MIX, 2010.

The MFIs' earnings, measured as yield on their portfolio between 2004 and 2010, vary across regions (see Figure 8.4). South Asia clearly underperforms the other regions in all observation periods with an average yield of 23.74% (significant at the 1 percent level). Over all periods, Africa and Latin America and the Caribbean are the top performing regions on average with respect to their average yield on portfolio. Except for South Asia and Africa, all regions experienced a decline in portfolio yield in recent years, possibly indicating the effects of increasing competition. Because portfolio yield does not account for loan losses (Cull et al., 2007, F118), the microfinance crisis and the resulting repayment difficulties are not reflected in this measure.

[94] All MFIs are included here (no matter how many diamonds) in order to ensure enough observations by region/country.

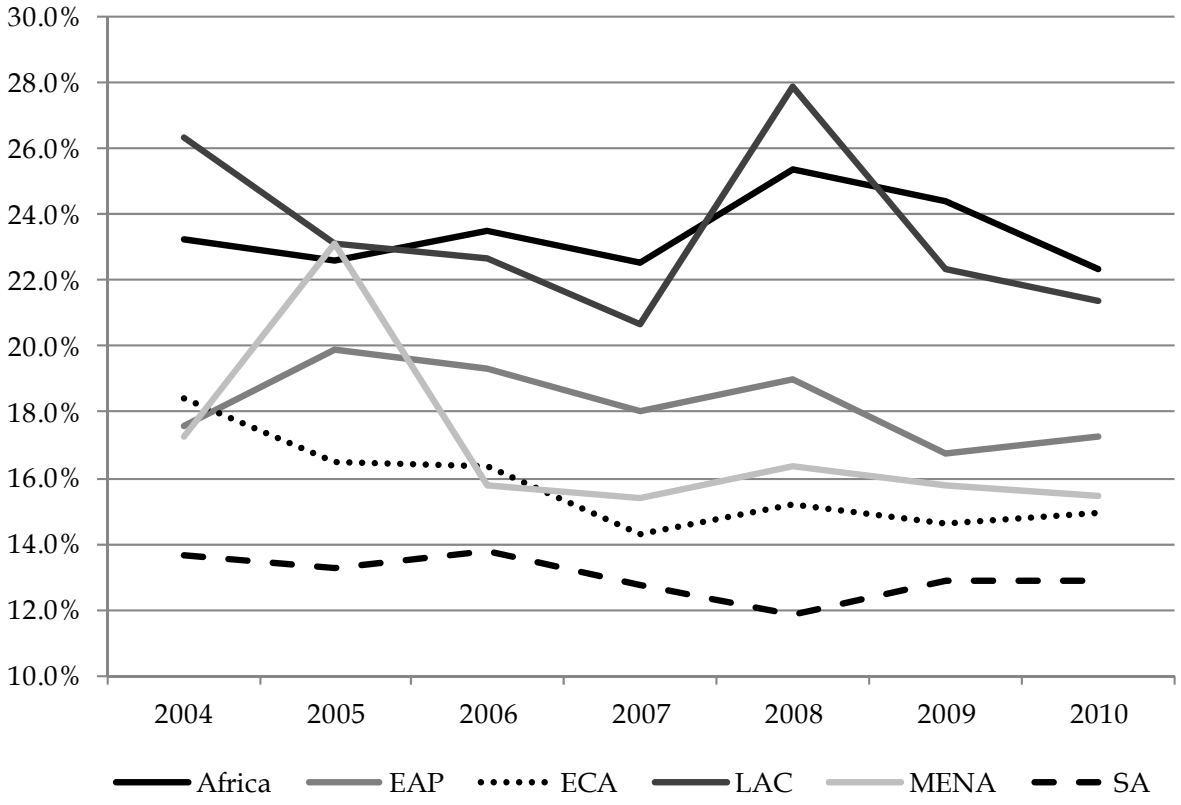
Figure 8.4 Yield on Portfolio by Region (%) 2004-2010



Source: own research based on data from MIX, 2010.

When assessing operating expenses, Africa and Latin America and the Caribbean are the lowest performing regions, significant at the 1 percent level (highest expenses in relation to assets) (see Figure 8.5). Latin America and the Caribbean experienced a large increase in expenses in 2008, levelling to 21.4% in 2010. As expected, similar to the results published by González (2011, 1), South Asia shows the highest efficiency in terms of operating expenses while all other regions managed to reduce operating expenses over the period.

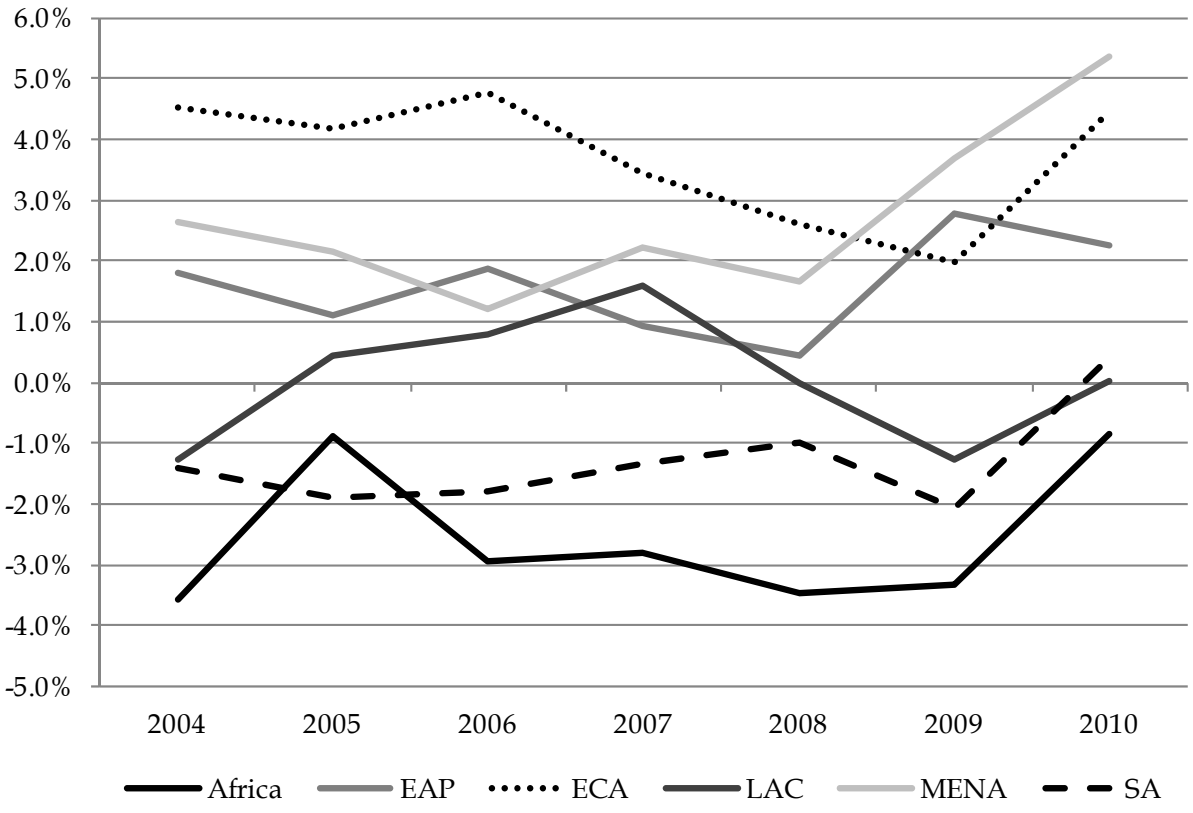
Figure 8.5 Operating Expenses / Assets by Region (%) 2004-2010



Source: own research based on data from MIX, 2010.

These high expenses lead to very small values for ROA in Africa compared with the MFIs in other regions for the years 2003 – 2010 (significant except for the comparison with SA), whereas Latin America and the Caribbean manages average performance and is above zero between 2005 and 2007 (see Figure 8.6). South Asia underperforms the other regions except Africa on the measure of ROA confirming the results by Stephens / Tazi (2006) and Galema et al. (2011). MFIs in Africa and South Asia show negative levels of ROA for all the years 2005 – 2009 but gain higher ROAs in 2010, and South Asia even reaches positive levels. Eastern Europe and Central Asia shows the highest level of ROA with a short downturn in the years 2008 and 2009 (again confirming Stephens / Tazi, 2006).

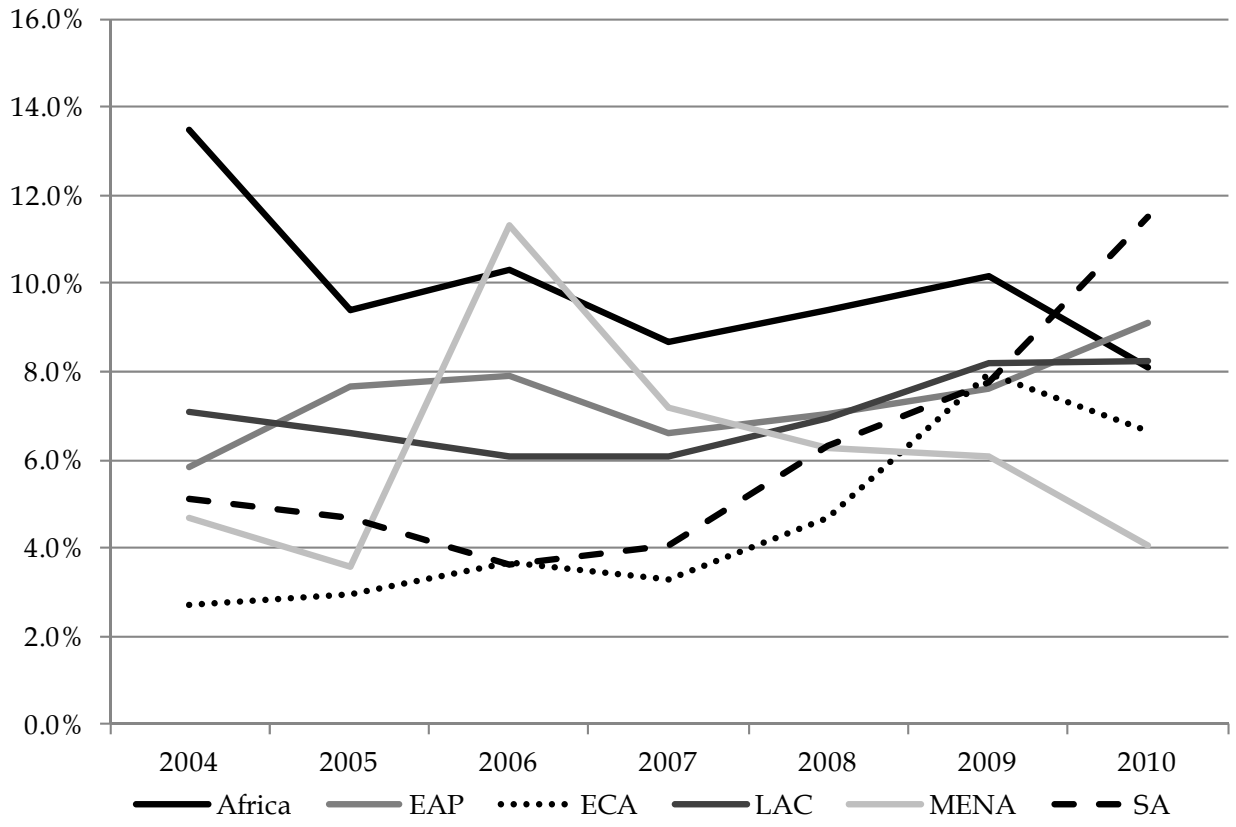
Figure 8.6 Return on Assets by Region (%) 2004-2010



Source: own research based on data from MIX, 2010.

The analysis of regional aspects from a fund manager's perspective depends on the factors influencing its return. Yield on portfolio has a strong effect on the financial performance for debt investors (see further analysis in Chapter 10). Therefore, Africa and Latin America and the Caribbean may experience more attention from financially orientated funds. However, another important factor influencing investors' decisions is the potential default risk of MFIs, caused by losses on loans. The values of PAR30 are higher in Africa compared with other regions, significant at the 1 percentage level (see Figure 8.7). This might be the reason why respondents reported only 8% of total assets in Africa (see Figure 8.3). Latin America and the Caribbean is an interesting region, with a high yield on portfolio and average risk and operating expenses, confirmed by the fact that it is the most popular region with respondents investing 35% of their assets there. Eastern Europe and Central Asia is second with 27% and convinces investors with low operating expenses and comparatively low values of PAR30.

Figure 8.7 Portfolio at Risk (PAR30, %) by Region 2004-2010



Source: own research based on data from MIX, 2010.

The development of PAR30 varied across different regions during the recent financial crisis. South Asia experienced a large increase in average PAR30 in 2008, 2009 and 2010, whereas the high value in 2010 is especially driven by India, Pakistan and Bangladesh. Unfortunately, more detailed data on regional differences within countries is not available. This level of analysis would be important as regions such as Andhra Pradesh in India or Punjab in Pakistan were hit harder by the crisis than the rest of the countries.

PAR30 did not change significantly in Latin America and the Caribbean during the period analysed. While Nicaragua experienced a crisis with a rise in PAR30 to 22.09% in 2010 (and with 180 observations over the seven years the country accounts for a large share of the region after Mexico and Ecuador), the other countries in the region compensate for this development. At this time Ecuador's PAR30 was 3.33% and Mexico's was 6.03%. Eastern Europe and Central Asia experienced an increase in PAR30 over the last 3 years of the period studied, reaching 6.67% in 2010. This is largely caused by

Bosnia & Herzegovina where PAR30 was 11.03% in 2010 while countries like Tajikistan and Kyrgyzstan managed to keep their levels of PAR30 around 3%.

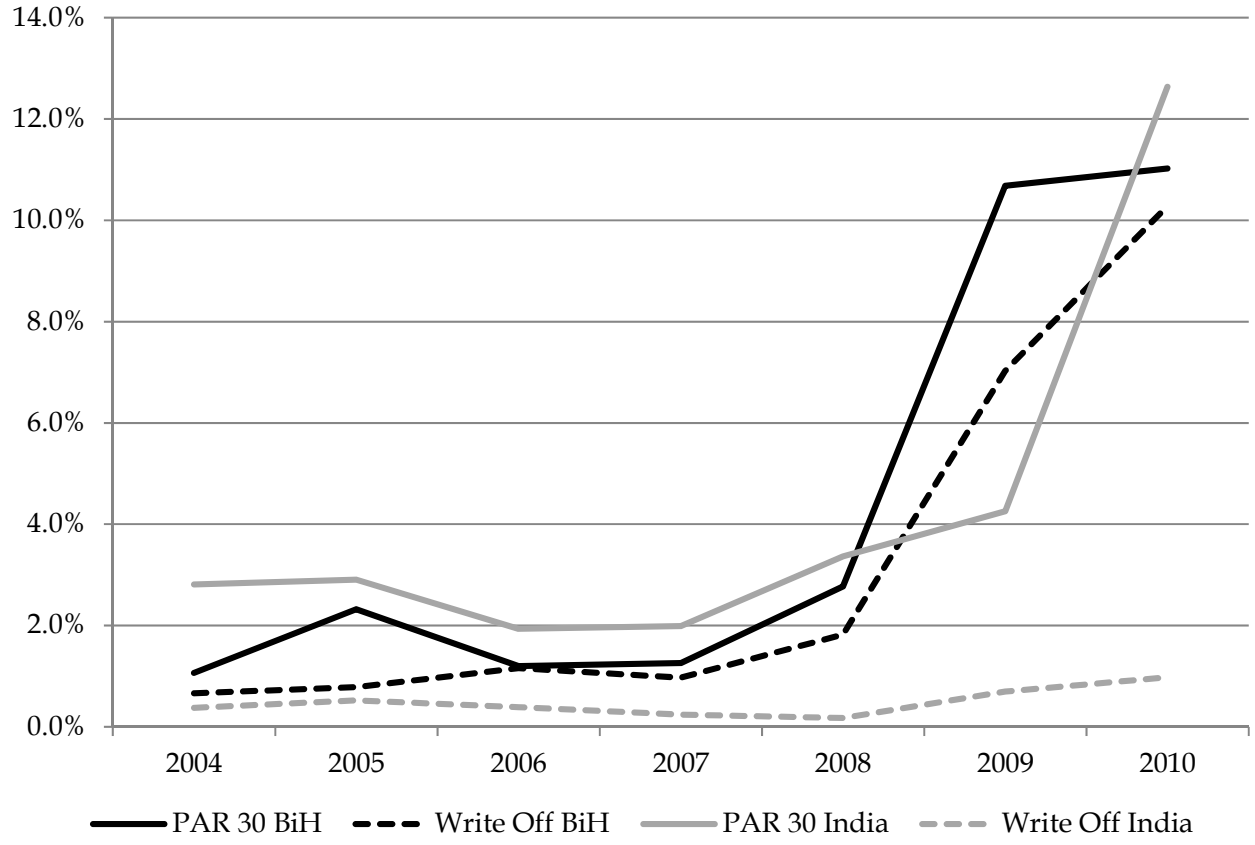
The crisis is not so evident from other measures. For example, ROA increased in 2010 in all regions except East Asia and the Pacific with a slight decrease. The negative effect on Latin America and the Caribbean is, once again, caused by developments in Nicaragua, where the ROA value is -5.84% in 2010. ROA in India remains positive on average in every year except for 2004 while Mexico had negative ROA in 2004 and 2005 but otherwise the value was positive.

When analysing PAR30 data it can be useful to examine the write-off-ratios as the PAR30 value of a MFI depends on its write-off policy (Rosenberg, 2009, 6). A MFI that immediately writes off loans that are not paid off shows a low PAR30 rate. This is illustrated by the development of write-offs in Bosnia & Herzegovina and India, where the impact of the financial crisis was particularly severe (see Figure 8.8). The two countries experienced comparable jumps in their PAR30 ratios starting in 2008, which continued to increase in 2009 and 2010. However, in India the write-off ratio remained at a very low level, which could be an indication that Indian MFIs have not (yet) written down the risky loans, while Bosnia & Herzegovina saw a significant increase in write-offs starting in 2008.[95] This could explain the negative ROA ratios in 2009 and 2010 in Bosnia & Herzegovina, while India continued to show positive average ROAs. Clearly, when the risk of a MFI is analysed using PAR30, cautious interpretation is important. According to the CGAP disclosure guidelines for the financial statements of a MFI, overdue payments older than 180 days should be written off by the MFI twice a year (Rosenberg et al., 2003, 25). This means that some MFIs might not have reacted terminally to the crisis so far, as they only account for lower repayment behaviour by augmenting PAR ratios and not by writing off existing loans. Augmentation of the PAR does not affect the return of a MFIF directly, because it does not necessarily influence

[95] Interestingly, BiH shows even lower levels of PAR90 than India, so that the higher write-offs in BiH cannot be explained by the longer terms of non-repaid loans. However, one explanation could be that the Indian MFIs are better at collecting outstanding loans. The loan loss rate in India remained at a very low level of 0.87% in 2010, whereas in BiH the loan loss rate increased from 0.52% in 2004 to 9.03% in 2010.

the financial statements of the MFIs[96] as long as no provisioning is done. A look at the current risk coverage rate, which measures how far the impairment loss allowance[97] is adjusted in relation to PAR30, would help to assess whether institutions build appropriate provisions. Nevertheless, this measure is not available on MIX.

Figure 8.8 Write-off Ratio (%) versus PAR30 (%) 2004-2010



Source: own research based on data from MIX, 2010.

Fund managers therefore need to be careful when assessing the consequences of potential crises, as some KPIs (e.g. ROA) may not be meaningful when it is possible for MFIs to postpone write-offs and provisioning (at least within a limited time frame).

Outreach to the poor is another factor that is important to fund managers when placing their assets, and to investors when valuing investments. Differences between average loan balance and average loan balance in relation to the GNI per capita emerge when

[96] According to the Consensus Guidelines, PAR ratios should be disclosed within a portfolio quality and management report (Rosenberg, 2003, 32).

[97] The impairment loss allowance is an asset account (typically negative) being calculated by adding current year provisions and subtracting current year write-offs from the prior year impairment loss allowance.

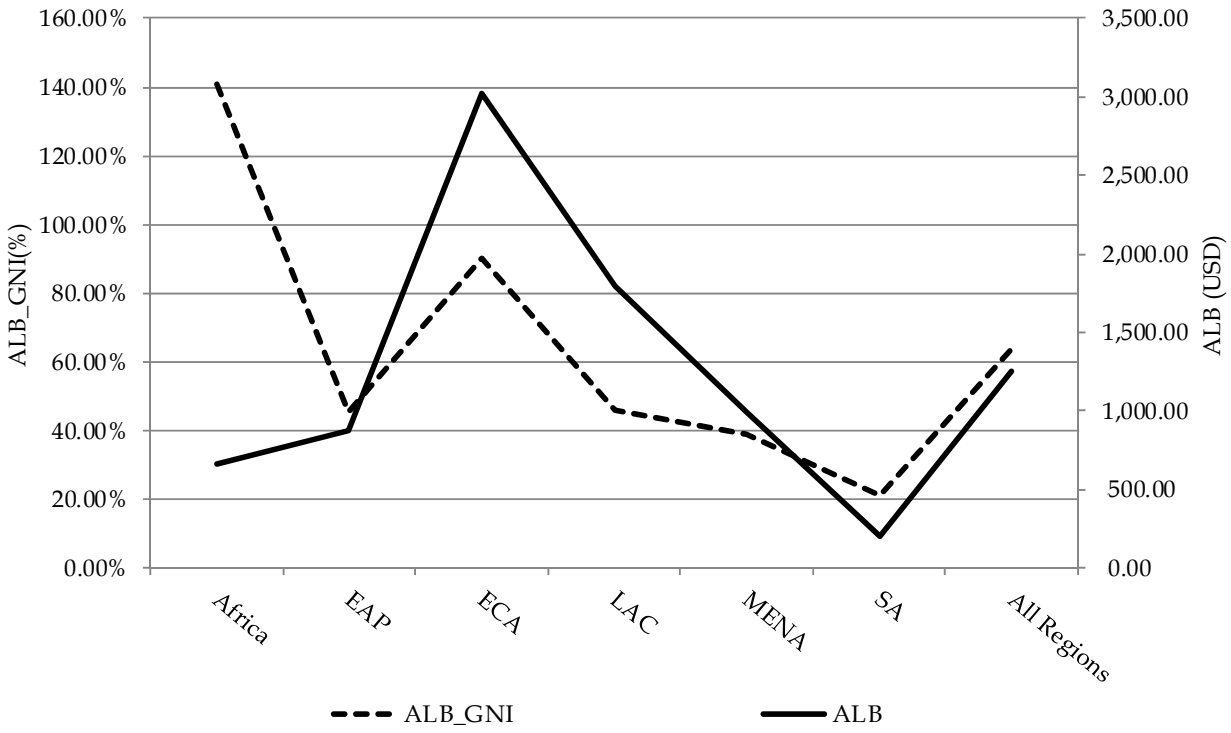
comparing regions in 2010 (see Figure 8.9). Average loan balance is shown in US Dollars using the secondary (right) axis and average loan balance in relation to GNI per capita (ALB_GNI) in % based on the primary (left) axis. For example, in Africa the average loan balance per borrower seems to be very low at first sight (USD 664). However, when Africa's lower GNI per capita is taken into account, the average loan balance is relatively high for Africa when compared with the other regions. The average size of loans in Latin America and the Caribbean is higher than average (USD 1,792), but the GNI per capita is higher than average leading to low levels of average loan size per GNI. This may be because poverty measured in absolute terms (people living on less than USD 1 per day) is not as severe in Latin America and the Caribbean as in other countries (The World Bank (ed.), 2012, 72). These results reinforce the importance of relating average loans to GNI per capita rather than using absolute values. Therefore, analysing average loan balance in relation to GNI per capita, South Asia and Latin America and the Caribbean are found to be the best regions for more socially interested investors (small loan sizes). Regarding the percentage of female borrowers, South Asia clearly outperforms the other regions in terms of social performance, serving 88.4% women on average in 2010.[98]

When comparing regions and countries, it is necessary to understand the different regulation and policy systems, which can have a major influence on the development of MFIs. These include the inflation rate, the exchange rate and the taxation systems. This means that funds need to investigate the specific characteristics of the region on top of the qualities of MFIs when choosing investments.

As described earlier, the funds participating in this survey are well diversified across countries so that country-specific crises may not affect them to any great extent.

[98] This result is calculated using the same database.

Figure 8.9 Average Loan Balance in Relation to GNI per Capita (2010)



Source: own research based on Iossifidis, 2010.

8.4 SUMMARY OF CLASSIFICATION RESULTS

Based on theoretical considerations regarding the distinction between different fund structures and styles, this Chapter used empirical data from the survey and the MIX database to discover the factors most important for classification.

For future analyses based on more data points, a distinction according to these classification criteria would be useful (see Table 8.3). The degree of commercialisation of a fund plays an important role in regard to its target return and its benchmark. Commercial funds and DFIs are likely to have different targets and their returns should therefore not be compared.

Regional aspects are important when comparing funds and when financial performance data becomes available for more funds, indexes could be calculated separately for each region.[99] Nevertheless, analysing regions in aggregate may lead to biased or overstated results as the effect of diversification within a region can lead to the eradication of individual effects in particular parts of a region. For example the effect of the

[99] However, it has to be considered that most of the large MFIFs are evenly diversified across regions.

financial crisis on areas such as Andhra Pradesh, Punjab or countries such as Nicaragua or Mexico are not revealed in an analysis of the countries or regions as a total. The smallest available unit of regional allocation should therefore be analysed.

Risk and diversification aspects should be considered as they have an impact on return assessment. Funds could be treated differently according to their risk profile. A possible example is using a risk premium to adjust the performance of funds that are not diversified across countries or MFIs. Other than that, returns could be calculated and compared on a risk-adjusted basis when more information and longer history are available.

Table 8.3 Further Differentiation between Funds for Indexing

Criterion	Differentiation
Commercialisation	• Commercial funds versus DFIs
Regional focus	• Different indexes for regions
Risk exposure	• Adjust for different risk levels / calculate and compare returns on a risk-adjusted basis

Source: own research.

Due to the limited availability of data and the relatively low rate of response by fund managers, the above mentioned classification criteria can only be used in a limited manner.[100] Instead, an approach similar to the one used by Symbiotics is applied, separating the funds into debt and equity investments and, in accordance with their accounting currency, into US Dollars and Euros. Because funds invested in equity do not provide financial return information on a regular basis, two groups for the index calculation are separated:

- debt funds (Euros)
- debt funds (US Dollars).

[100] Nevertheless, the results of this Chapter is directly used in the empirical analysis in Chapter 10, as the factors elaborated as influencing microfinance performance here are used as control variables in the regression model.

9. INDEX CALCULATION

9.1 CALCULATION METHODOLOGY

To calculate the indexes, I use absolute day-to-day total returns (%) provided by funds or Bloomberg on a monthly basis, starting with a base value of 100 in December 2003 and cumulating monthly returns. The starting date is the earliest date for which performance information is available. The level of the index at each point in time reflects the performance of the funds included relative to the particular base period (Bos, 2000, 11). I include funds from the date on which they start to operate. This means that the indexes do not necessarily include the total number of funds over the whole period. However, none of the funds included in the calculations ceased operations during the time period observed.[101] Among microfinance funds in general, a few did terminate operations in the respective time frame. Nevertheless, it is very hard to determine the number and names of the funds that ceased operations as most of them did not provide information publicly beforehand. Therefore, a potential survivorship bias seems not to be a big issue as the probability is high that none of the funds that disappeared so far would have provided financial performance data for indexing or other purposes.

I use the following two methodologies of index calculation (according to Lhabitant, 2008, 489; Reilly / Wright, 1997, 134):

- weighted by total assets in 2010 (Microfinance (MF) Cap)
- equally weighted (MF).

I apply the weighting technique using total assets in a methodology in line with the price index calculation by Laspeyres.[102] This means that the total assets of one particular period are used for the weighting of the funds over the whole time frame. In contrast to the Laspeyres technique, the total assets as of December 2010 are used instead of the base period. I decided to apply this technique because most funds reported total assets at a single point in time rather than the monthly development. Therefore, I weight their monthly performance using total assets as of December 2010. In addition, two late-responding funds reported total assets for 2011.

[101] A number of funds did not provide performance data for November and December 2011 because they handed in the survey earlier; however, this does not lead to a significant change in the index.

[102] See Chapter 6.3.1 for the Laspeyres price index.

Two indexes weighted by total assets 2010 (one in US Dollars and one in Euros) and two equally weighted indexes (one in US Dollars and one in Euros) are calculated. I compare the two indexes for each currency with the corresponding SMX (US Dollars / Euros). The US Dollar index comprises the same number of funds as the SMX USD, namely six, but two funds are not the same. The composition of the Euro index is more varied than the SMX EUR as it includes 13 instead of seven funds.

I calculate two separate indexes for the two currencies in order to avoid the influence of currency fluctuations on the index performance. The combination of the two currencies in one index would lead to difficulties in interpretation. Particularly in microfinance, where the underlying portfolio is often reported in the local currencies of diverse countries, the translation to either US Dollars or Euros could lead to performance deviations. Therefore, particularly from a practitioner's point of view, the calculation of two separate indexes makes sense.[103]

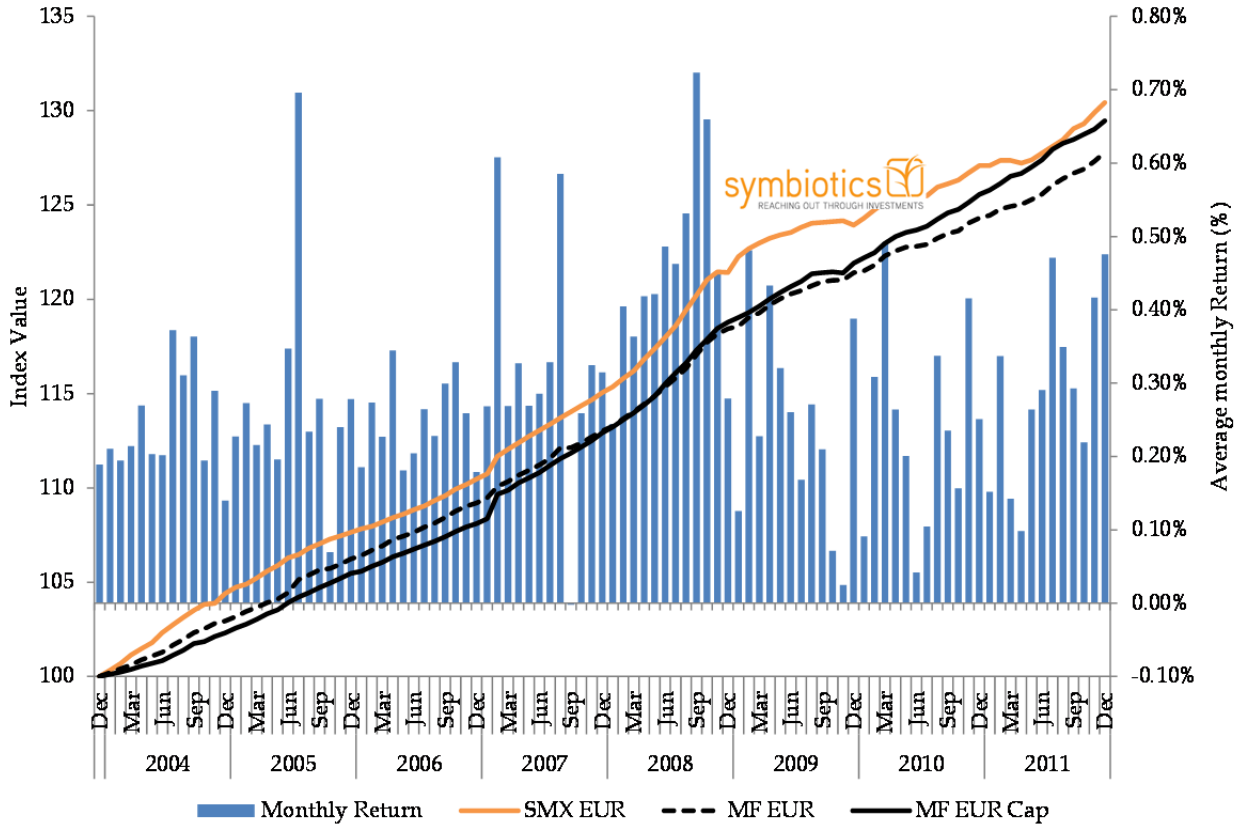
9.2 *INDEXES FOR INVESTMENTS IN DEBT*

The two Euro indexes (MF EUR and MF EUR Cap) are calculated and compared with the SMX EUR (see Figure 9.1). Performance data are available from December 2003 to December 2011. All the respondents that provide monthly financial return data are either open- or closed-end funds, whereas the comparability of financial data is ensured.

Average monthly performance of the included funds is shown in percentage by the bars in Figure 9.1, which relate to the secondary (right) axis. The average return of the funds included is positive for all months observed between December 2003 and December 2011. This is the reason why the calculated indexes, which represent cumulative performance, rise continuously over the period. The mean monthly return deteriorated slightly between 2009 and 2011 (monthly return 0.26% on average) compared to the prior years (0.30% on average). In 2008, the average monthly performance of the MFIFs reached a peak at 0.45%, just as the financial crisis began.

[103] I made this decision based on statements by fund managers.

Figure 9.1 Index for Investments in Debt (EUR)



Source: own research and www.syminvest.com (15.01.2012).

To calculate the indexes, I aggregate the average monthly returns and standardise to December 2003. The black line indicates the index calculated on an asset-weighted basis (MF EUR Cap) and the dashed black line is the index calculated on an equally weighted basis (MF EUR). The orange line is the SMX EUR, which is computed by Symbiotics using an equal-based weighting method and including seven funds.

In comparison with the SMX EUR, both the asset-weighted and the equally weighted Euro index show weaker performance summing to a negative 0.96% (96 base points) and a negative 2.63% (263 base points) over the total period.[104] A difference in performance between the indexes calculated and the SMX EUR occurs notably in 2004 (June and December), in February 2007 and in January 2009. Otherwise the indexes proceed essentially in parallel. The apparent underperformance of the indexes calculated in this paper is caused by the inclusion of more and obviously weaker performing funds. The results for the Euro funds therefore confirm the hypothesis that Symbiotics rather over-

[104] In this particular analysis of indexes based on 100, all three notations: percentage, percentage points and base points can be used interchangeably, with 1 percentage = 100 base points.

estimates the return of the microfinance industry by including only their own managed funds.

Interestingly, the performance of the equally weighted and the asset-weighted indexes differs only slightly. Between 2004 and the first half of 2008, the asset-weighted index underperforms the equally weighted index by 0.58% (58 base points) on average. Starting in mid-2008, the asset-weighted index outperforms the equally weighted index, resulting in plus 167 base points by the end of 2011. Thus the large funds, which have a strong influence on the asset-weighted index, perform better than the smaller funds between late 2008 and 2011. This difference might be caused by large currency fluctuations in the Euro (CGAP (ed.), 2012, 3), which have a disproportionately large effect on small funds: Larger funds may have better opportunities to deal with currency risks (for example due to their access to currency hedging facilities). Also, the microfinance crisis as well as the financial crisis could have impacted smaller funds more intensively (for example because of less diversification across regions and markets or because of less capacity for provisioning).

In general, the differences between all three indexes are relatively small, which leads to the proposition that the performance of the debt funds using the Euro as their accounting currency is essentially similar. This could be explained by the earlier mentioned expectation that commercial funds all invest in the same Tier 1 MFIs (see 5.1).

The results of the analysis of microfinance debt investments in US Dollars are similar to those for Euro investments (see Figure 9.2). For US Dollar funds, the average performance is positive in every month, except in April and May 2011, while average monthly returns are clearly lower from 2009 to 2011 (0.22%) than they have been in the years before (0.41%).

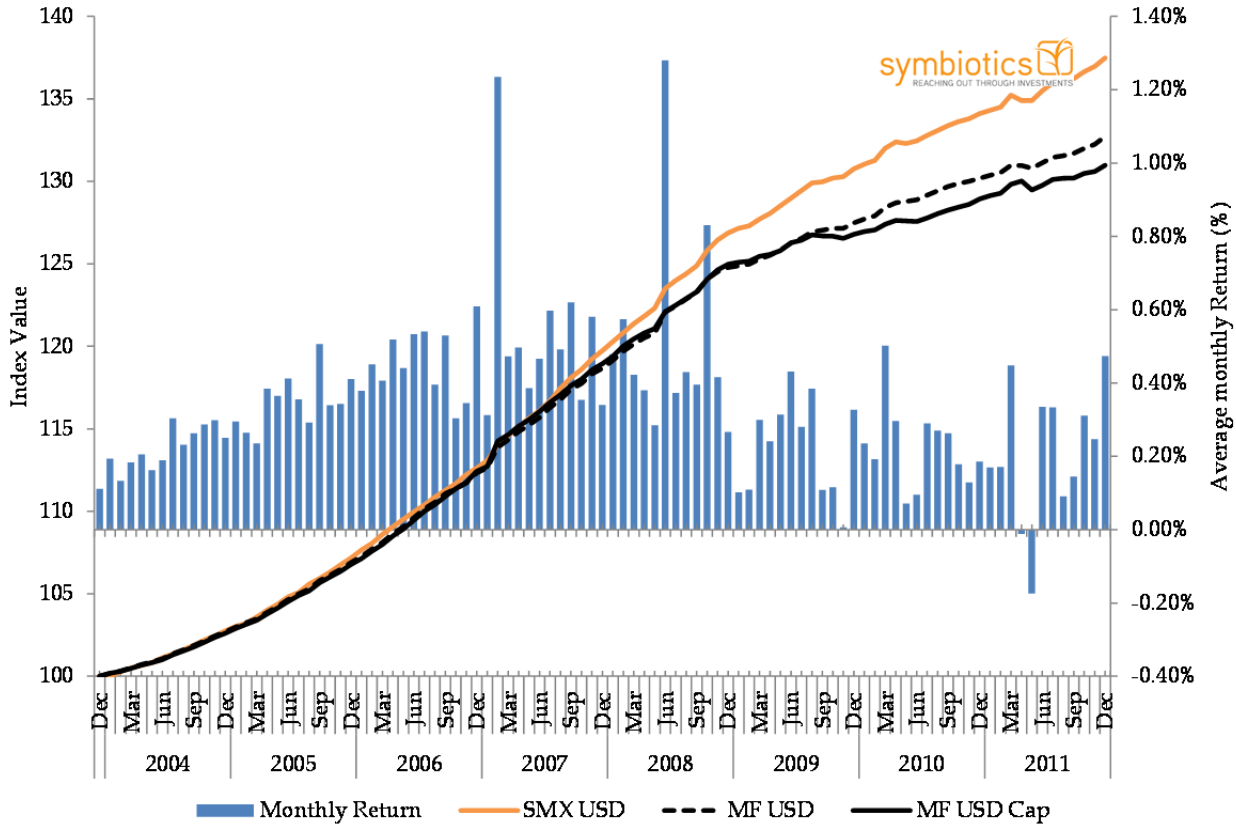
From 2004 until July 2007, the three indexes differ only marginally. After July 2007, the calculated US Dollar indexes clearly underperform the SMX USD, leading to minus 4.76% (476 base points) on the equally weighted index and minus 6.51% (651 base points) for the asset-weighted index by December 2011. The reason for this significant underperformance is the exclusion of two high-performing funds that are included in SMX USD but failed to respond to our survey. The two funds that are substituted for them do not significantly underperform the other four funds in the sample.

In contrast to the Euro funds, the asset-weighted US Dollar index (MF USD Cap) starts to underperform in mid-2009 compared to the equally weighted index. The outperformance of the equally weighted index (MF USD) amounts to 1.75% (175 base points) by the end of 2011. Thus, when focusing on US Dollar vehicles, larger funds perform worse than the smaller funds.

The constantly increasing pattern of the microfinance indexes calculated could indicate the presence of return smoothing techniques applied by fund managers. For example by strategically postponing parts of large returns from one year to another, they could have avoided the disclosure of lower return figures in later years. Nevertheless, in the years analysed, both MFIs and MFIFs experienced strong growth and no major crises emerged. Particularly before the years 2009 and 2010, MFI downturns were very rare and accordingly there is little in the literature that addresses microfinance crises on an institutional level (Rozas, 2011, 7). Still, for conclusive proof that fund managers did not apply methods of return smoothing there is insufficient information on the individual portfolios available in this industry. Even though it is public knowledge that some institutions experienced problems, it is not possible to check whether particular funds had those titles included in their portfolios. Nevertheless, as the microfinance industry is still young, the realisation of growth is easier from very low starting levels, and this could explain the trend of the index indicating, for example, economic or technical development (Fahrmeir et al., 2003, 548).

The fact that the benchmark results for both US Dollar and Euro funds is lower than the existing SMX indicates that the fund managers who responded have not overstated their performance in the survey.

Figure 9.2 Index for Investments in Debt (USD)



Source: own research and www.syminvest.com (15.01.2012).

9.3 Comparison of MF Index with SRI and Traditional Indexes (US Dollar)

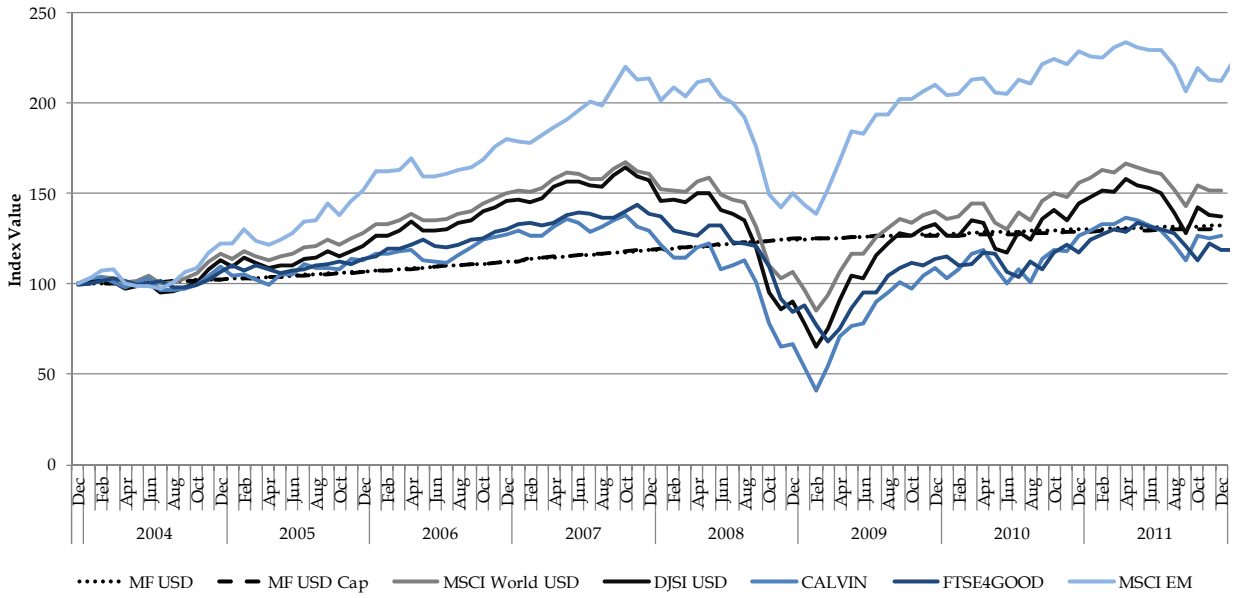
9.3.1 Comparison of the Debt Index

The comparison of the calculated MF USD indexes with SRI and traditional indexes aims at disclosing the special characteristics of investments in microfinance described previously and possible diversification effects (see Figure 9.3).

In this analysis, all the indexes included are equity based because bond indexes were elaborated much later, and to date, debt indexes are still in the minority (Reilly / Wright, 1997, 129), and when it comes to SRI, no debt index is widely established. The creation of bond market indexes is more difficult because the universe of bonds is larger and changing constantly (Reilly / Wright, 1997, 131). Furthermore, a number of bond issues are not actively traded and sometimes still included in bond indexes. Therefore, the index might include price estimates for certain bonds which could lead

to inaccurate results (Elton et al., 2003, 23). Nevertheless, for completeness, a comparison with standard bond indexes follows on page 130.

Figure 9.3 Comparison of MF Debt Index to SRI and Traditional Indexes (USD)



Source: own research and Bloomberg, 29.2.2012.

Data on the traditional indexes MSCI World, MSCI Emerging Markets (MSCI EM) and the three SRI indexes DJSI USD, Calvert index (CALVIN) and FTSE4GOOD were retrieved from Bloomberg. I chose the three SRI indexes, which were introduced briefly in Chapter 2.2.1, based on data availability. The MSCI World index captures large and mid-cap representations across 24 developed countries, including 1,613 companies and accounting for around 84% of the free-float-adjusted market capitalisation of each country. The index is weighted using free-float-adjusted market capitalisations (UBS (ed.), 2012). The MSCI EM is a free-float-adjusted market capitalisation index that focuses on the equity market performance of emerging countries.[105]

The microfinance monthly returns (USD) display low variation (standard deviation of 0.21% for equal weighting and 0.24% for asset-weighting, calculated on monthly returns) and follow a slowly growing path between 2004 and 2011. In contrast, both the

[105] The following 21 countries are included: Brazil, Chile, China, Colombia, Czech Republic, Egypt, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Morocco, Peru, Philippines, Poland, Russia, South Africa, Taiwan, Thailand, and Turkey (as of May 30, 2011, see http://www.msci.com/products/indices/tools/index.html#EM, May 23, 2012). This selection of countries is therefore not a complete overlap with MFIF investment countries.

SRI indexes (DJSI, CALVIN, FTSE4GOOD) and the traditional indexes (MSCI World and MSCI EM) show up- and downturns during the eight-year period. Moreover, the variation in the returns is greater, as shown by a larger standard deviation of monthly returns amounting to 5.25% for DJSI, 4.87% for MSCI World and 7.29% for MSCI EM. The expectation based on PE investments, assuming that MFIFs would not show levels of volatility as high as publicly listed funds, is therefore confirmed. The high volatility of the MSCI EM indicates that the lower standard deviation of the MF index is not due to the focus on emerging markets.

From the beginning of 2008, all the SRI and traditional indexes experienced a drastic downturn in performance that lasted until the beginning of 2009 (see Table 9.1). All the SRI indexes and the MSCI World index experienced negative growth during this time resulting in index values below 100. Until the beginning of 2009, the performance of all the indexes except the MSCI World and EM and the two MF indexes was negative. The CALVIN was hit hardest, resulting in an index low point (41.20 points) in February 2009. By the end of 2008, both microfinance indexes performed better compared with the other indexes except for the MSCI EM (see Table 9.1). In 2009, the SRI and traditional indexes started to recover after a low point at the beginning of the year. The MSCI EM clearly outperforms all the other indexes over the whole observation period in total at a remarkable 60.20% above the second best performer, the MSCI World Index. The total return achieved with traditional and SRI investments is higher by the end of 2011, as microfinance is outperformed by all other indexes except for the FTSE4GOOD and the CALVIN. I find similar results when focusing on investments in Euros and comparing the MF index EUR to the DJSI EUR, the ING socially responsible index and the MSCI World EUR (see Figure 12.1 in the Appendix).

Nevertheless, for direct performance comparisons it is important to keep in mind that the index calculated here is based on fund data and when conducting analyses at the fund-level, differentiating between the performance of the fund manager and the securities themselves is difficult (Mollet / Ziegler, 2012, 3). Furthermore, risk profiles are not necessarily comparable among the indexes due to the focus of MFIFs on small companies, whereas other indexes comprise large entities (Globalance (ed.), 2012, 49).

Table 9.1 Performance in US Dollar

Index	Total Cumulative Return					Volatility
	31.12.2007	31.12.2008	31.12.2009	31.12.2010	31.12.2011	2004-2011
MF USD	18.66%	24.78%	27.49%	30.19%	32.72%	0.21%
MF USD Cap	18.96%	24.99%	26.79%	28.94%	30.97%	0.24%
MSCI World	61.16%	6.59%	40.57%	56.29%	52.02%	4.87%
MSCI EM	113.79%	50.24%	110.30%	128.88%	112.21%	7.29%
DJSI USD	57.34%	-9.82%	33.47%	44.74%	37.18%	5.25%
CALVIN	29.75%	-33.39%	8.77%	27.06%	26.51%	4.69%
FTSE4GOOD	37.49%	-12.14%	15.20%	24.56%	19.16%	5.09%

Source: own calculation, return compared to base period December 2003.

Table 9.2 Correlation MF Debt Index with SRI / Traditional Indexes (2003-2011)

	MF USD	MSCI World	MSCI EM	DJSI USD	CALVIN	FTSE4GOOD
MF USD	1.0000					
MSCI World	-0.0578	1.0000				
MSCI EM	-0.0469	0.8947***	1.0000			
DJSI USD	-0.0512	0.9907***	0.9005***	1.0000		
CALVIN	-0.0502	0.9409***	0.7840***	0.9155***	1.0000	
FTSE4GOOD	-0.0498	0.9928***	0.8759***	0.9913***	0.9433***	1.0000

*** p<0.01, ** p<0.05, * p<0.1

Analysis of the correlation coefficients between the different monthly returns in the period 2003 to 2011 shows that all returns are strongly positively correlated except for the MF returns (see Table 9.2), which are negatively correlated to all the other index returns, although not at a significant level. While this result is remarkable and the method is also applied by other researchers (e.g. Statman, 2006, 108; Reilly / Wright, 1997, 139 ff.), it is necessary to point out some limitations. Economic variables such as monthly performance, which exhibit strong trends, are not stationary in many cases (Green, 2012, 942). This implies that mean, variance and covariance change over time, and regular correlation estimations are possibly biased. Moreover, time-series data disturbances often display autocorrelation or serial correlation over time (Green, 2012, 903). The so-called ARIMA model controls for non-stationary effects by calculating first-differences of the variables (Green, 2012, 943). This adjustment of the variables leads to stationary outcomes. The ARIMA model is applied here as well, and the same

albeit insignificant negative effects are found between the MF index and the other indexes (results available on request).

Possible reasons for the relatively stable growth of the MFIFs are the earlier mentioned illiquidity, the long-term investment focus, and the few valuation dates. Moreover, most MFIFs that invest in MFIs using debt obligations tend to value the obligations at par. This results in the low volatility of the return. Previous research by Oehri / Schäfer (2011, 110) confirms the low volatility and stable returns of MFIFs. The only events that significantly influence the NAV and thus the return of a MFIF are the write-offs of existing loans due to the risk of default or the building of provisions (see Chapter 6.1) (Symbiotics (ed.), 2012a, 89). During the recent crisis, the MFIFs' NAVs did not suffer from defaults or higher provisions to any significant extent. In total, the development of the funds remained positive, except for two months when the US Dollar funds moved into the negative zone. These results support the view that the microfinance industry tends not to be affected by financial crises (Krauss and Walter, 2008; González, 2007).

However, Wagner (2012) finds that MFI credit growth slowed substantially and portfolio quality deteriorated in the microfinance industry in 2008 and 2009, particularly in countries with strong capital inflows (Wagner, 2012, 10). This development would suggest that the microfinance market is not operating independently from the traditional banking sector in certain regions. She argues that microfinance has become part of the global credit cycle and thus reacts to crises in a similar way to the rest of the market (Wagner, 2012, 18).

Comparing both types of evidence, it seems therefore fair to assume that the performance of MFIFs is more immune to crises and less connected to global developments than individual MFIs are, due to diversification across countries and markets. This reinforces the fact that investing in microfinance through funds rather than directly through MFIs is less risky for investors. The funds that provide performance information tend of course to be the larger and more diversified ones, which strengthens this effect. Furthermore, as discussed earlier, the funds that provide performance information might also be the ones that are performing best, or the ones least affected by the crisis. As stated earlier, another explanation would be that MFIs have not yet writ-

ten off the loans that are overdue despite the high PAR30 values prevailing in some regions and funds therefore did not adjust provisions accordingly.

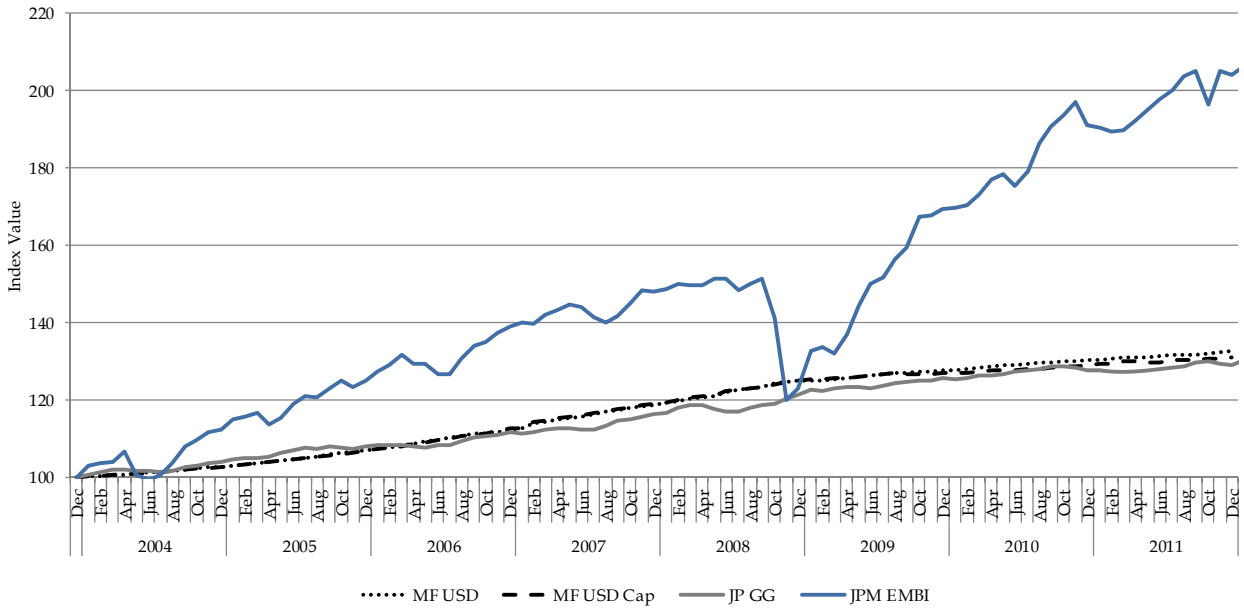
The results confirm that the financial performance of microfinance investments differs greatly from traditional and SRI indexes and, thus, might be interesting for the purpose of diversifying existing portfolios. Particularly in phases of turmoil, the MF index has not reacted in the same way as other indexes. All the indexes that are included are equity based and therefore probably subject to factors other than debt investments in microfinance. I assume that the differences between microfinance debt investments and the other indexes are not caused by the special nature or the regional allocation of the microfinance market, but by the unique characteristics of microfinance returns. The financial performance of microfinance funds (debt) is influenced to a large extent by interest payments and is therefore not comparable with equity investments. The benchmarks used by the funds (money market plus, LIBOR) are appropriate because the development of the index shows similar attributes and low volatility. As suggested by Hechler-Fayd'herbe in 2010, investments in microfinance perform in a way that is similar to money market instruments. This is not surprising as the interest rates paid by the clients are short term and can thus be adjusted regularly to reference rates, such as LIBOR or EURIBOR (Hechler-Fayd'herbe, 2010, 2).

Because of this special characteristic of microfinance investments, an assessment of the relationship between the MF index and bond indexes is necessary. In this analysis, the JP Morgan Global Government Bond Index (JP GG)[106] and the JP Morgan Emerging Market Bond Index (JP EMBI) are taken into account, while I find the JP GG to offer the best match from a performance point of view (see Figure 9.4). Cumulative performance seems to follow a similar path, and monthly performance is mostly positive and relatively independent of the financial crisis. The correlation coefficient between the monthly performances of the two indexes is positive but insignificant. Tracking fixed rate issuances from countries around the world, the JP GG also fully depends on interest rate payments, which is likely to be the reason for the performance link to microfinance. However, unlike to microfinance investment funds, the JP GG focuses on bonds issued by governments. The respective types of issuers are therefore quite dif-

[106] This index tracks fixed rate issuances from countries around the world, hedged in US Dollar.

ferent. Government bonds are comparable with corporate bonds regarding repayment patterns, nevertheless, corporate bonds face a higher risk of default (Elton et al., 2003, 15). The JP EMBI, tracking actively traded external debt instruments in emerging markets[107], clearly outperforms the MF index. Furthermore, the correlation of the monthly performances is negative between the two indexes.

Figure 9.4 Bond Indexes in Comparison with MF Debt Indexes (USD)



Source: own research and Bloomberg, 29.2.2012.

To conclude, an index closely related to monthly microfinance performance cannot be identified, even when bond and emerging market indexes are included. Although the path of the JP GG seems to be in line with the MF index, the monthly performances are not significantly related.

9.3.2 *Comparison of Equity Indexes*

The analysis of equity investments shows a different picture. Equity investments can only be represented by the SMX equity, as I do not have enough data points to calculate a specific equity index. As mentioned earlier, the SMX equity is based on the performance of the five largest MFIs, which are all publicly listed.

The SMX equity shows higher standard deviation (8.51%) than the debt investments in microfinance. Moreover, contrasting with the debt indexes, the SMX equity exhibits a

[107] See http://www.jpmorgan.com/pages/jpmorgan/investbk/solutions/research/EMBI.

downturn in 2008 / 2009 (resulting in a low mark of 138.71, simultaneously with the SRI and traditional indexes in February 2009) followed by a phase of growth in the first half of 2010. The cumulative performance of the five MFIs used by Symbiotics for the SMX equity is higher than the performance of the SRI indexes or the traditional indexes (see Figure 9.5). The MSCI EM performs better than all the other indexes except the SMX equity. The outperformance of the SMX equity amounts to a maximum of 59.16% (5,916.07 base points) compared with the MSCI World and 35.92% (3,591.72 base points) compared with the MSCI EM over the whole period. The SMX equity reached a peak in September 2010 and then fell consistently until the end of 2011, when it clearly underperformed the other indexes. This downturn is most probably linked to the recent crises in Andhra Pradesh and Nicaragua strongly influencing two of the five institutions representing the SMX equity.

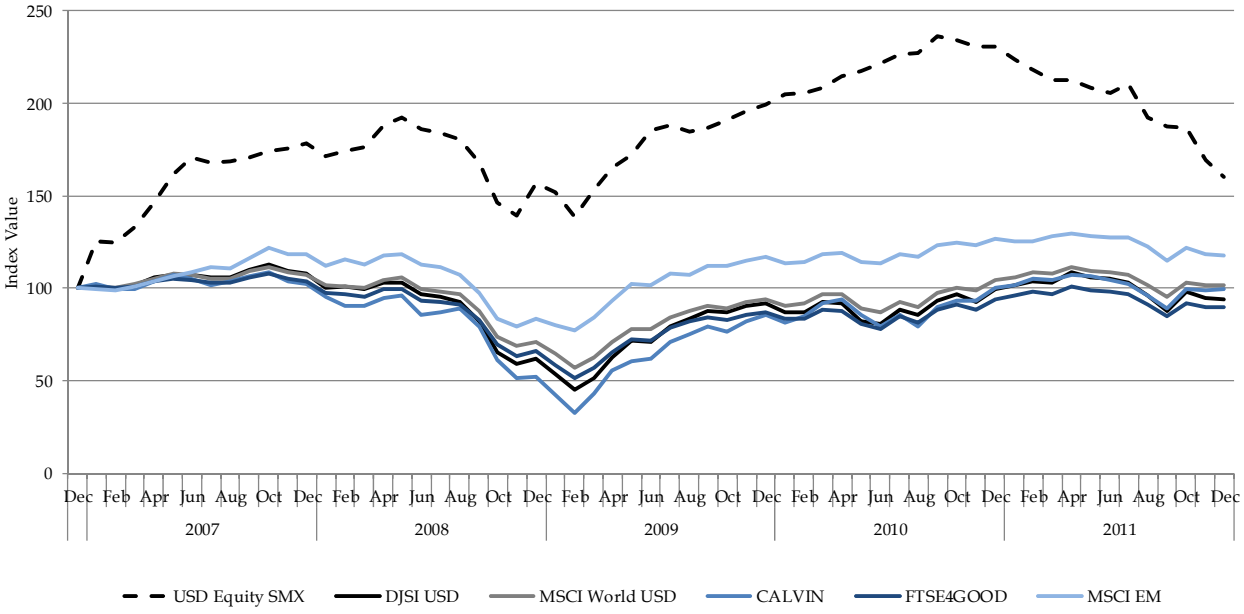
Investments in microfinance through equity are expected to show higher returns than debt investments (Symbiotics (ed.), 2012a, 29) and higher than commercial indexes (O'Donohoe et al., 2009, 27). However, an index calculation using equity funds rather than MFIs would be more appropriate and possibly lead to weaker results.

In October 2011, Brière and Szafarz calculated an equity index that includes all publicly listed MFIs worldwide.[108] By first calculating capitalisation weighted indexes for several countries (Kenya, Indonesia, Bangladesh, Mexico and South Africa) and then aggregating the countries into one worldwide capitalisation weighted equity index, they generate a global microfinance index (GMI). They compare their index with a constructed global financial index (GFI) mimicking the procedure of the GMI and including the same countries. The authors find evidence that the GMI and the GFI have largely converged, starting around 2003. For South African MFIs they find exceptionally high growth between 1990 and 2010 (6 ff.). However, the SMX equity largely outperforms their equity based GMI index, which includes more MFIs. The cause of the outperformance by the five MFIs used by Symbiotics is not linked to regional effects as they are distributed across different regions (Bangladesh, Mexico, Indonesia, Kenya and India). There must therefore be other reasons for the high performance of the five

[108] They consider three MFIs in South Africa, one in Kenya, two in Indonesia, one in Bangladesh and two in Mexico (total of 9 MFIs).

MFIs considered by Symbiotics. The SMX equity outperforms an index measuring the performance of all listed MFIs and might outperform non-listed MFIs even more, and therefore seems most probably not to represent the microfinance industry appropriately.

Figure 9.5 Comparison of SMX Equity to SRI and Traditional Indexes (USD)



Source: own research and Bloomberg, 29.2.2012.

The correlation coefficients between the SMX equity and the SRI and traditional indexes are shown in Table 9.3. The SMX equity reveals a strong and significant correlation with the other four indexes. While the correlation coefficient is lower than the coefficients between the SRI and commercial indexes, it is significantly positive. As with the debt investments, broader analysis is helpful. Running the ARIMA model for the equity investments, I again find significantly positive results for all index returns compared with the SMX equity (results available on request).

Table 9.3 Correlation SMX Equity with SRI / Traditional Indexes (2003-2011)

	SMX Equity	MSCI World	MSCI EM	DJSI USD	CALVIN	FTSE4GOOD
SMX Equity	1.0000***					
MSCI World	0.5900***	1.0000				
MSCI EM	0.6224***	0.9084***	1.0000			
DJSI USD	0.5761***	0.9911***	0.9171***	1.0000		
CALVIN	0.5438***	0.9533***	0.8152***	0.9286***	1.0000	
FTSE4GOOD	0.5798***	0.9936***	0.8943***	0.9920***	0.9536***	1.000

*** p<0.01, ** p<0.05, * p<0.1

The weak and even negative correlation between the MF indexes and traditional and SRI indexes leads to the result that for the debt part of the investments diversification possibilities exist. Once debt investments in SRI are more elaborated and debt SRI indexes exist, this analysis could be revisited.

The interaction between social and financial performance besides microfinance diversification possibilities is analysed in the following Chapter using data on MFIs rather than funds. MFI level data are used to overcome the problem of the lack of MFIF data on social performance. Only 12 survey participants provided information on both social and financial return. Furthermore, social return is difficult to measure and compare across funds. As discussed above, funds must apply appropriate methodologies for the calculation of an average value for all the MFIs they are invested in. Comparison of social performance is particularly difficult for funds invested indirectly in MFIs through other vehicles (as discussed earlier in Chapter 6.2).

10. ECONOMETRIC ANALYSIS: SOCIAL VERSUS FINANCIAL RETURN

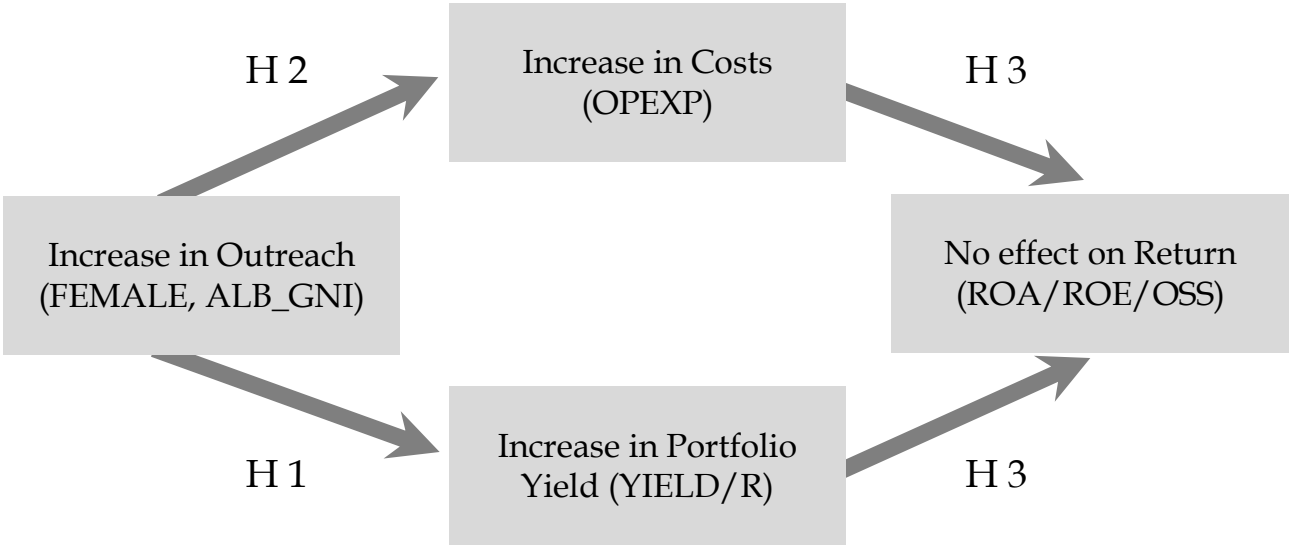
10.1 SOCIAL VERSUS FINANCIAL RETURN: HYPOTHESES

Three Hypotheses are elaborated based on the existing literature concerning the interaction between outreach to the poor and financial return in microfinance (see Chapter 4.4.2 for details). Prevailing research is not consistent regarding the direction of the interaction of social factors with financial return. Social return is in microfinance usually measured based on outreach to the poor, operationalised with percentage of female clients and average loan balance. Certain researchers find deeper outreach to the poor related to lower efficiency (e.g. Conning, 1999; Cull et al., 2007; Hermes, 2011) while others see a positive relationship between outreach and financial self-sufficiency (e.g. Paxton, 2003; Quayes, 2011). Furthermore, Cull et al., 2007, find no significant relationship between outreach and return measures. These contradictory results motivated a more detailed analysis. Besides the traditionally estimated factors measuring return and costs, portfolio yield is analysed here as well. The intention is to go one step deeper by trying to identify how the factors driving return measures (cost and yield) are related to outreach measures. The Hypotheses developed here are based on the assumption that outreach to the poor controversially influences different aspects of financial return (Figure 10.1). Existing research indicates that outreach to the poor positively impacts portfolio yield and increases costs at the same time, which would lead to a zero or very weak influence on return measures.

All three Hypotheses address the relationship between financial return and outreach to the poor.

The first Hypothesis reflects the findings of Conning (1999) indicating that MFIs providing smaller loans charge higher interest rates. Portfolio yield measures clients' gross interest payables by dividing interest and fee income by average loan portfolio and is therefore used as a proxy for interest rate. Smaller loans in turn indicate higher levels of outreach. Confirmation of this Hypothesis would indicate higher returns with more outreach to the poor (everything else being equal).

Figure 10.1 Overview Hypotheses



Source: own research.

Hypothesis 1: The higher the outreach, the higher the portfolio yield.

The second Hypothesis is predicated on the results of several authors including Conning (1999), Paxton (2003), Cull et al. (2007) and Hermes et al. (2011) who show evidence that social return (outreach) comes at higher costs:

Hypothesis 2: The higher the outreach, the higher the costs.

Therefore, the second Hypothesis indicates lower returns at more outreach (everything else being equal).

The third Hypothesis then follows directly from the first two. Financial return measured as ROA, ROE or OSS is controversially affected by portfolio yield and costs. All return measures increase with portfolio yield and lower with costs. This Hypothesis is based on the findings of Dam (2008), who states that various financial measures are diversely connected to social factors (Dam, 2008, 27). If outreach has a positive impact on both portfolio yield and costs, the resulting effect on return could be erased.[109]

Hypothesis 3: Outreach is not related to financial return.

The interaction between the three Hypotheses is of course limited because earnings other than portfolio yield could influence return. Also, a wide spectrum of costs, possibly not all connected with outreach, could affect financial return.

[109] Assuming that the two effects are of similar size.

Hypothesis 3 is also supported by the fact that until now, researchers have not found a significant relationship between financial return (measured as profitability) and social return measured by means of a variety of indicators (Cull et al., 2007; Quayes, 2011).

10.2 OPERATIONALISATION OF VARIABLES

10.2.1 FINANCIAL PERFORMANCE MEASURES: DEPENDENT VARIABLES

There are various measures that can be used for the analysis of the financial performance of MFIs. Since MFIs are not listed, accounting indicators such as ROA, ROE and efficiency measures are used as indicators of performance (Galema et al., 2011, 511; Tchakoute-Tchuigoua, 2010, 438).

The top ten KPIs of MFIs defined by Symbiotics are a useful source of measures relevant to MFIs and nine of the ten measures are used in this analysis (see Table 10.1).[110] This analysis uses total assets as a proxy for the size of an MFI rather than the loan portfolio.[111] Number of clients is a measure for the breadth of outreach (social performance). I use this measure only in the regression diagnostics to analyse whether the effect of breadth is comparable with the influence of depth of outreach.

To test the first Hypothesis, I take portfolio yield on both a nominal (YIELD) and a real (YIELDR) base. Portfolio yield is used as a proxy for average interest rates at MFI levels (González, 2011, 1). Higher portfolio yield values indicate higher revenues earned by the institutions and thus better financial performance. Loan losses are not subtracted from the revenue, which means that YIELD is a gross measure capturing the interest rate charged by the lender, rather than the interest rate realised on the portfolio (Cull et al., 2007, F118).

As a proxy for costs (Hypothesis 2), I use operating expenses divided by assets (OPEXP), as they have been found to be the most important driver of differences in total costs between institutions (Cull et al., 2009, 183). In the dataset used, operating

[110] Other authors use the same or similar KPIs (e.g. Krauss / Walter, 2008, 8; Ledgerwood, 1999, 205 ff.); see also KPIs used in existing research mentioned in 4.4.2.

[111] The analysis does only differ marginally when instead including loan portfolio. In the main dataset used, gross loan portfolio and total assets are strongly correlated with a correlation coefficient amounting to 0.98, significant on the 1% level (own calculation using 2,547 observations).

expenses and total expenses strongly correlate (coefficient of 0.92, significant at the 1% level). Results therefore only differ marginally if including total expenses in the analysis instead of operating expenses. Operating expenses are the best indicator for the efficiency of the MFI's lending operations (Ledgerwood, 1999, 214) and are therefore an appropriate measure.

Table 10.1 MFI Key Performance Indicators (KPIs) by Symbiotics

Key Performance Indicators	Used as
Total Assets	Control Variable
Loan Portfolio	Not Used
Number of Clients	Regression Diagnostics
Average Loan	Social Performance
Portfolio Yield	Financial Performance, Hypothesis 1
Portfolio at Risk > 30 days (PAR30)	Control Variable
Operating Expense	Financial Performance, Hypothesis 2
Operational Self-Sufficiency (OSS)	Financial Performance, Hypothesis 3
Debt / Equity Ratio	Control Variable
Return on Equity (ROE)	Financial Performance, Hypothesis 3

Source: Symbiotics (ed.), 2012a, 30.

ROA, ROE and OSS were used to measure the financial return of MFIs and to test the third Hypothesis. ROA and ROE are measures widely used for the performance of banks and companies as well as microfinance institutions (Ledgerwood, 1999, 221). ROA puts return in relation to total assets and ROE defines the relationship between return and equity. OSS reflects the performance of institutions before subsidies. Subsidies are usually provided in the form of grants or loans at interest rates below market rates. It is likely that some institutions would not be able to maintain their performance without subsidies (Rosenberg, 2009, 9). OSS measures the degree to which operational income covers expenses (operating expenses, financial expenses plus impairment losses) and is therefore not affected by subsidies.

10.2.2 SOCIAL PERFORMANCE MEASURES: INDEPENDENT VARIABLES

I analyse social return using depth of outreach, which is measured in two ways: the percentage of female borrowers (FEMALE) and the average loan size in relation to GNI per capita (ALB_GNI). These two variables are chosen for different reasons. Depth of outreach instead of breadth captures more of the social attitude of MFIs (Conning, 1999, 52). Nevertheless, breadth of outreach is used in an additional analysis in Chapter 10.5.4.5 to cover the whole spectrum of outreach to the poor. I use female borrowers as a proxy for depth of outreach because women usually have less access to financial services (GPFI / IFC (ed.), 2011, 18). Furthermore, women have been traditionally somewhat excluded from decisions related to finance at the household level and they often lack access to financial services (Ledgerwood, 1999, 226). Still, the percentage of female clients is not the perfect measure of outreach, as reasons other than a more socially conscious attitude could force or motivate an institution to serve more or less women. For example, the religious or ethical context could play a role, as in some regions women might not have the right to obtain a loan (Urgeghe, 2010, 75). However, I continue to use the percentage of female borrowers as a proxy for outreach, because so far no other more relevant indicators for social return have been elaborated. To ensure a broader picture of outreach, I also measure the average loan size.

Among investors and donors, the size of the loans distributed is commonly used as a proxy for a MFI's outreach to the poor (Mersland / Strom, 2010, 29). ALB in relation to GNI per capita provides a better and stronger measure than does ALB alone (as described in Chapter 8.3.2). Nevertheless, the average loan balance is an often-criticised measure as it is not comparable for all loans, being influenced by term to maturity, repayment frequency and the size and number of instalments. For example a two-year loan that is paid back in one instalment yields on average the same as the amount disbursed. However, a loan that is repaid in equal monthly instalments over the two years yields on average slightly more than the amount disbursed (Schreiner, 2001, 34). Experts criticise quantitative approaches in general on the grounds of biases that result from the failure to take all the cultural and social factors into account (Paxton, 2003, 4; Ledgerwood, 1999, 225).

Another factor that is sometimes used to indicate the depth of outreach is the proportion of rural customers. Unfortunately these data are not available either in the data file that is used or in other large-scale datasets. Likewise, more detailed measures of depth of outreach, such as education, ethnicity, housing, access to public services of customers etc. are not publicly captured. Therefore, to date it is not possible to focus on quantitative measures of outreach to the poor other than the percentage of female borrowers and average loan balance. (See other approaches to measure social return in 3.3).

Nevertheless, average loan balance per borrower seems to be an efficient proxy for depth of outreach as Quayes (2011) finds a strong positive correlation between the income level of clients and loan size, meaning that poorer clients obtain smaller loans (Quayes, 2011, 3424). Furthermore, most previous research studies also use either female clients and average loan balance or only one of the two measures to capture the social performance of MFIs (see literature review in Chapter 4.4.2).

To conclude, two measures to capture outreach are used: outreach increases with the percentage of female clients and decreases with higher average amounts of loans distributed.

10.3 REFINEMENT OF HYPOTHESES

Using the above-specified variables for the measurement of financial and social performance, the following refinements to the Hypotheses elaborated earlier are made:

- *H1a: The more female clients served (FEMALE), the higher the portfolio yield on a nominal and a real base (YIELD / YIELDR);*
- *H1b: The lower the average loan balances in relation to GNI per capita (ALB_GNI), the higher the portfolio yield on a nominal and a real base (YIELD / YIELDR);*
- *H2a: The more female clients served (FEMALE), the higher the operating expenses (OPEXP);*
- *H2b: The lower the average loan balances in relation to GNI per capita (ALB_GNI), the higher the operating expenses (OPEXP);*
- *H3a: The percentage of female clients (FEMALE) has no impact on financial return (ROA / ROE / OSS);*
- *H3b: The average loan balance in relation to GNI per capita (ALB_GNI) has no impact on financial return (ROA / ROE / OSS).*

10.4 EMPIRICAL METHOD

To estimate the model, cross-sectional data on MFIs is pooled for the years 2004 to 2010. The result is an unbalanced panel dataset[112], while all MFIs reporting to MIX during the seven-year period are included.

The multivariate analysis is based on an Ordinary Least Square (OLS)-regression. The relevant variables are defined and their functional interaction assessed. In the next step, the regression is estimated by identifying the coefficients based on the available database. The values, the sign and the significance of the different coefficients are then tested. A discussion of the results based on the Hypotheses is followed by the validation of the regression model applying several tests.

As the sample includes more than one observation per institution (over several years) the standard errors may be correlated. Therefore, heteroskedasticity-robust standard errors clustered by MFI are included.[113] Furthermore, time-effects are controlled by the inclusion of dummy variables for each year because an unobservable incident in a specific year could have influenced the observations.

10.5 ESTIMATION OF THE REGRESSION

10.5.1 REGRESSION MODELS

To test the three Hypotheses developed in Chapter 10.3 the following three regression models are estimated:

Model 1:

$$YIELD_{it}/YIELDR_{it} = \beta_0 + \beta_1 FEMALE_{it} + \beta_2 ALB\_GNI_{it} + \beta_3 SIZE_{it} + \beta_4 AGE_{it} + \beta_5 PAR30_{it} + \beta_6 LEVERAGE_{it} + \beta_{7-11} LEGAL_t + \beta_{12-16} REGION_t + \beta_{17-22} YEAR_t + \varepsilon_{it}$$

Model 2:

$$OPEXP_{it} = \beta_0 + \beta_1 FEMALE_{it} + \beta_2 ALB\_GNI_{it} + \beta_3 SIZE_{it} + \beta_4 AGE_{it} + \beta_5 PAR30_{it} + \beta_6 LEVERAGE_{it} + \beta_{7-11} - LEGAL_t + \beta_{12-16} REGION_t + \beta_{17-22} YEAR_t + \varepsilon_{it}$$

[112] Using an unbalanced dataset rather than a balanced one has the advantage of representing the market more effectively by including all MFIs and preventing survivorship bias (see Baum, 2006, 47).

[113] So-called Roger's standard errors, which are White standard errors, adjusted for potential correlation within clusters (see Petersen, 2009, 436).

Model 3:

$$ROA_{it}/ROE_{it}/OSS_{it} = \beta_0 + \beta_1 FEMALE_{it} + \beta_2 ALB\_GNI_{it} + \beta_3 SIZE_{it} + \beta_4 AGE_{it} + \beta_5 PAR30_{it} + \beta_6 LEVERAGE_{it} + \beta_{7-11} LEGAL_t + \beta_{12-16} REGION_t + \beta_{17-22} YEAR_t + \varepsilon_{it}$$

where:

Dependent Variables		
YIELD	= Gross yield on portfolio (nominal) (%)	Gross measure capturing the interest revenues earned by the institutions in relation to the portfolio (nominal)
YIELDR	= Gross yield on portfolio (real) (%)	Gross measure capturing the interest revenues earned by the institutions in relation to the portfolio (real)
OPEXP	= Operating expenses of MFI (%)	Operating expenses in relation to total assets
ROA	= Return on assets (%)	Return divided by total assets
ROE	= Return on equity (%)	Return divided by equity
OSS	= Operational self-sufficiency (%)	Degree to which operational income covers expenses
Explanatory Variables		
FEMALE	= Percentage of female clients (%)	Percentage of females that are served by MFI
ALB_GNI	= Average loan balance (%)	Average loan in relation to GNI per Capita Average loan balance distributed by MFI
Control Variables		
SIZE	=Size of the MFI	Natural logarithm of total assets of MFI
AGE	=Age of the MFI	Years since foundation of the MFI
PAR30	=Portfolio at risk, 30 days (%)	Percentage of loans overdue more than 30 days
LEVERAGE	=Leverage of the MFI	Debt to equity ratio divided by 100
LEGAL	=Legal Status of the MFI	Vector of dummy variables indicating legal status of the MFI: Bank (BANK), credit union / cooperative (COOP), non-governmental organisation (NGO), other (OTHER), rural bank (RURBANK), non-banking financial institution (NBFI, excluded as base)
REGION	=Regional location of the MFI	Vector of dummy variables indicating regional location of the MFI: Africa (AFRICA), Europe and Central Asia (ECA), Latin America and the Caribbean (LAC), Middle East and Northern Africa (MENA), East Asia and the Pacific (EAP, excluded as base)
YEAR	=Year fixed effects	Dummy variable for each year from 2005 to 2010, taking 2004 as base

and i = MFI, t = Year

The three different models are used for the three sets of Hypotheses, as the relevant dependent and independent variables used and the predicted sign of the coefficients differ (see an overview in Table 10.2).[114]

Table 10.2 Summary of the Hypotheses

HYPOTHESIS	REGRESSION MODEL USED	FINANCIAL RETURN (DEPENDENT VARIABLE)	OUTREACH (INDEPENDENT VARIABLE)	PREDICTED SIGN
Hypothesis 1a	MODEL 1	YIELD/YIELDR	FEMALE	POSITIVE
Hypothesis 1b	MODEL 1	YIELD/YIELDR	ALB_GNI	NEGATIVE
Hypothesis 2a	MODEL 2	OPEXP	FEMALE	POSITIVE
Hypothesis 2b	MODEL 2	OPEXP	ALB_GNI	NEGATIVE
Hypothesis 3a	MODEL 3	ROA/ROE/OSS	FEMALE	INSIGNIFICANT
Hypothesis 3b	MODEL 3	ROA/ROE/OSS	ALB_GNI	INSIGNIFICANT

Source: own research.

To test for other effects that might influence the relationship between social and financial return, I include several *control variables*. These are defined by referring to the previous research and results elaborated in Chapter 8 (legal status and region).

SIZE and AGE of an institution have often been found to correlate with performance measures (Cull et al., 2007, F113; Barnett / Salomon, 2006, 1115; Zacharias, 2008, 14). Therefore, controlling for AGE and SIZE ensures that any relationship between outreach and financial performance is not affected by differences in the size or age of the MFIs. It has been found before that the age of a MFI might have a positive impact on its efficiency (Caudill et al., 2009, 662). Moreover, larger MFIs have often been found to have lower costs per borrower and lower costs per dollar lent. This relationship may be explained either by scale or by a learning curve effect, as larger MFIs are likely to be older (González, 2011, 3). For SIZE, I use the natural logarithm of total assets of a MFI

[114] To assure an easy understanding of the regression analysis, it is important to keep in mind, that outreach is measured here using two variables (female and average loan balance in relation to GNI), whereas the two expected effects are opposite. The reason for this is that the variable female is positively related to outreach (increases outreach), while average loan is negatively related.

(Kyereboah-Coleman, 2007, 62). AGE refers to the number of years an institution has been active using the year of inception as the starting point.

I include PAR30 to control for different risk structures by measuring the portion of the portfolio with payments overdue by more than 30 days.[115] The debt to equity ratio, LEVERAGE, is included as a control for different financing structures that could influence financial performance (Conning, 1999, 75). The leverage of MFIs varies depending on the amount of their subsidies or financing by funds (debt or equity) and these large differences could have an impact on return. Existing research finds contradictory results on the direction of the influence (Kyereboah-Coleman, 2007, 68; Quayes, 2011, 3429). Kyereboah-Coleman (2007) uses panel data from Ghana and finds that highly leveraged MFIs reach out to more clients and enjoy economies of scale (68). Quayes (2011) in contrast finds that leverage has a negative influence on the performance of MFIs measured as financial sustainability (3430). To control for the structural characteristics of MFIs, I define the following fixed effects for legal status: BANK, COOP (credit union / cooperative), NGO (non-governmental organisation), OTHER, RURBANK (rural bank) and NBFI (non-banking financial institution). I exclude NBFI as base for the dummy, and thus the effects on the other legal status variables show the differences versus the observations on NBFI. For regional fixed effects, I use the traditional regions Africa, Eastern Europe and Central Asia, Latin America and the Caribbean, Middle East and North Africa, South Asia and East Asia and Pacific (Cull et al., 2007, F118), excluding East Asia and Pacific as the base region. To measure differences across periods, I include yearly fixed effects for all but the base year (2004) (YEAR). The dummy variable for each year takes the value 1 for the corresponding year and 0 otherwise.

The consideration of multiple dummy variables (LEGAL, REGION, YEAR) results in different intercepts for each observation, controlling for the various fixed effects of the particular variables (Wooldridge, 2003, 438).

10.5.2 DESCRIPTIVE STATISTICS

The MFIs in the database report an average nominal portfolio yield of 33.94% and an average real portfolio yield of 25.38% (see Table 10.3). Real yield demonstrates (with a

[115] I also included the write-off ratio as a control, but the results remain stable and as the focus here is not on risk measures, I only include PAR30.

minimum of -22.40%) that when inflation is high, some MFIs realise a loss rather than a gain from interest revenues in real terms. For both nominal and real yield the mean is higher than the median, indicating a positively skewed distribution. The mean operating expenses in relation to assets is 17.60% with a maximum of 109.16%.

The distribution of ROE shows a large range from -1,286.19% to 1,791.28%. These large positive and negative levels can be explained by very small MFIs with a minor equity base. Nevertheless, these values are exceptions, as the average ROE is at 12.68%. In addition to the KPIs in As a proxy for costs (Hypothesis 2), I use operating expenses divided by assets (OPEXP), as they have been found to be the most important driver of differences in total costs between institutions (Cull et al., 2009, 183). In the dataset used, operating expenses and total expenses strongly correlate (coefficient of 0.92, significant at the 1% level). Results therefore only differ marginally if including total expenses in the analysis instead of operating expenses. Operating expenses are the best indicator for the efficiency of the MFI's lending operations (Ledgerwood, 1999, 214) and are therefore an appropriate measure.

Table 10.1, I include ROA in the analysis. ROE could be misleading and show positive results for MFIs exhibiting negative equity and negative return at the same time. With a mean of 3.06% and a median of 3.07%, ROA is approximately symmetrically skewed and distributed within a smaller range between -101.26% and 35.97%. Average values for ROA are rather low, caused by a large number of MFIs showing clearly negative performance results (250 of the 1,508 observations of ROA are below zero). The mean value of OSS is 122.47%, ranging from a minimum of 13.32% to a maximum of 833.88%. This means that at the maximum, operational income covers expenses by a factor of eight.

The average percentage of female clients is 62.52% and the distribution ranges from 1% to 100%. The median of 59.67% almost corresponds with the mean. The average loan balance is strongly positively skewed, as the mean (USD 1,165.45) is much larger than the median (USD 637.54). This means that a larger fraction of loans is small. The distribution of ALB in relation to GNI per capita ranges from a minimum of 0.28% to a max-

imum of 773.33%.[116] The logarithm of total assets leads to a mean value for size of USD 16.41. The age varies from 2 to 50 years with a mean of 16.80 years. Risk, measured as PAR30, is 4.47% on average with a range from 0.00% to 73.47%. PAR30 is strongly positively skewed as a large fraction of the observations shows a level of PAR30 below 5% (1,098 among the 1,508 observations). The mean leverage amounts to 5.09, which is the result of some MFIs being almost exclusively funded by debt. Again, the large maximum (302.56) is most probably driven by institutions with very small equity bases.

Table 10.3 Summary Statistics for the Main Sample 2004-2010

VARIABLE	OBS.	MEAN	MEDIAN	STD. DEV.	MIN	MAX
YIELD	1,508	33.94%	30.36%	16.36%	4.40%	188.36%
YIELDR	1,508	25.38%	22.17%	16.48%	-22.40%	178.89%
OPEXP	1,508	17.60%	14.40%	11.16%	2.11%	109.16%
ROA	1,508	3.06%	3.07%	7.67%	-101.26%	35.97%
ROE	1,508	12.68%	11.76%	94.65%	-1286.19%	1791.28%
OSS	1,508	122.47%	117.67%	39.24%	13.32%	833.88%
FEMALE	1,508	62.52%	59.67%	24.42%	1.00%	100.00%
ALB	1,508	1165.45	637.54	1723.61	5.01	36954.30
ALB_GNI	1,508	58.92%	33.04%	77.13%	0.28%	773.33%
SIZE	1,508	16.41	16.26	1.67	12.07	21.77
AGE	1,508	16.80	15.00	7.18	2.00	50.00
PAR30	1,508	4.47%	2.52%	6.69%	0.00%	73.47%
LEVERAGE	1,508	5.09	2.79	13.98	0.00	302.56

This Table displays summary statistics for the sample of 1,508 MFI observations, retrieved from MIX in 2012. The variables are defined in Chapter 10.5.1.

Source: own analysis, data from MIX (2012).

10.5.3 RESULTS

10.5.3.1 RESULTS IN RELATION TO THE HYPOTHESES

The constant of the first model (columns (1) and (2) in Table 10.4) is positive and reflects the YIELD / YIELDR of a MFI if all other variables take the value zero (Wooldridge, 2003, 75).

Evidence is found to support the first Hypothesis, which states that yield on portfolio is positively correlated to outreach (columns (1) and (2) in Table 10.4). The variable FEMALE shows a positive coefficient for both nominal (YIELD) and real yield

[116] This seems like a very large value but it can be explained using the example of a MFI offering average loans of USD 7,730 in a country that has a GNI per capita of USD 1,000.

(YIELDR) confirming *Hypothesis 1a.* The coefficients for both measures are significantly different from zero at the 1% level (indicated by three stars), representing a margin of error of less than 1%. This means that the more women served by a MFI, the higher the portfolio yield. The value of the coefficient (0.16) means that institutions serving only female clients request interest rates that are on average one standard deviation higher (both real and nominal) than the rates that institutions serving only males charge. One reason for this could be that women accept higher prices for loans because they face more difficulties with regard to financial access in general.

Evidence is also found to support *Hypothesis 1b* because the coefficient of ALB_GNI (average loan balance divided by GNI per capita) in relation to YIELD and YIELDR is significantly negative at the 1% level. Therefore, the lower the average loan size divided by GNI per capita (i.e. the more outreach is achieved), the higher the portfolio yield for a given MFI. The value of the coefficient is rather small though, indicating that a 100% increase in average loan balance in relation to GNI leads to a reduction of the yield by a quarter standard deviation. This means that, on average, higher prices are charged on smaller loans, which could indicate the intention of MFIs to cover the higher costs incurred by smaller loans. It therefore seems that cross subsidisation between smaller and larger loans does not happen to a significant extent.

The results for the second Hypothesis are calculated for OPEXP as the dependent variable (see column (3) of Table 10.4). The significantly positive coefficient for FEMALE and the significantly negative coefficient for ALB_GNI indicate confirmation of *Hypotheses 2a and 2b*. The results are again strongly significant at the 1% level, illustrating a low probability of error. More outreach thus comes at higher operating expenses. The coefficient is higher for the variable FEMALE than for ALB_GNI, similar to the results regarding Hypothesis 1. It therefore seems to be more costly to increase outreach by targeting female clients than by reducing the average loan sizes. Possible explanations for higher costs for female clients would be increased marketing efforts to target them or the development of group-building techniques in order to meet their special requirements.

Table 10.4 OLS Regression: Hypotheses 1-3 using Data from 2004 to 2010

VARIABLES	(1) YIELD	(2) YIELDR	(3) OPEXP	(4) ROA	(5) ROE	(6) OSS
FEMALE	0.162***	0.158***	0.108***	0.010	0.081	-0.043
	(3.87)	(3.98)	(4.57)	(0.74)	(1.28)	(-0.68)
ALB_GNI	-0.042***	-0.043***	-0.020***	-0.005	-0.014	-0.006
	(-3.49)	(-3.91)	(-3.75)	(-1.28)	(-0.60)	(-0.28)
SIZE	-0.012**	-0.004	-0.024***	0.008**	0.061	0.034***
	(-2.08)	(-0.78)	(-5.38)	(2.18)	(1.44)	(3.32)
AGE	-0.003*	-0.003**	-0.001	0.000	0.001	-0.000
	(-1.94)	(-2.33)	(-1.40)	(0.71)	(0.34)	(-0.24)
PAR30	-0.078	-0.019	0.022	-0.312***	-0.392	-1.219***
	(-0.73)	(-0.18)	(0.40)	(-6.41)	(-1.22)	(-6.38)
LEVERAGE	-0.027	-0.004	0.015	-0.066*	0.716	-0.210**
	(-1.17)	(-0.17)	(0.47)	(-1.73)	(0.60)	(-2.28)
BANK	0.031	0.001	0.021	-0.007	0.023	-0.057
	(0.86)	(0.04)	(1.47)	(-0.67)	(0.27)	(-1.13)
COOP	-0.116***	-0.083***	-0.066***	0.000	0.050	-0.018
	(-4.21)	(-3.16)	(-4.48)	(0.02)	(0.76)	(-0.42)
NGO	-0.025	-0.018	-0.017	0.018*	0.107	0.072
	(-1.20)	(-0.90)	(-1.16)	(1.86)	(1.04)	(1.64)
OTHER	0.054*	0.065**	0.056***	0.026*	0.022	0.143**
	(1.76)	(2.16)	(2.96)	(1.93)	(0.24)	(2.23)
RURBANK	-0.098	-0.092	-0.164***	0.041**	0.251	0.126
	(-1.13)	(-1.11)	(-4.64)	(2.06)	(1.26)	(1.60)
AFRICA	0.080**	0.049	0.076***	-0.021*	-0.113*	-0.122
	(2.10)	(1.25)	(2.73)	(-1.87)	(-1.87)	(-1.59)
ECA	0.014	-0.002	0.006	0.007	-0.038	-0.009
	(0.47)	(-0.06)	(0.25)	(0.64)	(-0.68)	(-0.12)
LAC	0.056*	0.073**	0.047**	-0.005	-0.075	-0.091
	(1.76)	(2.20)	(2.05)	(-0.44)	(-1.27)	(-1.26)
MENA	-0.002	0.009	-0.003	-0.001	-0.139	-0.033
	(-0.07)	(0.27)	(-0.11)	(-0.09)	(-1.37)	(-0.40)
SA	-0.125***	-0.137***	-0.060**	-0.041*	0.005	-0.149*
	(-4.15)	(-4.44)	(-2.02)	(-1.85)	(0.02)	(-1.83)
Time Fixed Effects	Included	Included	Included	Included	Included	Included
Constant	0.515***	0.336***	0.515***	-0.083	-0.563	0.861***
	(5.45)	(3.61)	(6.81)	(-1.35)	(-0.82)	(5.04)
Observations	1,508	1,508	1,508	1,508	1,508	1,508
R-squared	0.278	0.276	0.352	0.164	0.038	0.095

t-statistics in parentheses, calculated based on robust standard errors
*** p<0.01, ** p<0.05, * p<0.1

The dependent variables in this Table are the following: Yield on portfolio nominal / real is the interest and fee income divided by average loan portfolio, OPEX is operating expenses in relation to total assets, ROA and ROE are return in relation to total assets and equity, respectively, OSS (operational self-sufficiency) is the degree to which operational income covers expenses. The two most important explanatory variables with respect to the Hypotheses are the percentage of female borrowers (FEMALE) and the average loan balance in relation to the GNI per capita (ALB_GNI, in %). All other explanatory variables are defined in Chapter 10.5.1.

The third Hypothesis is also confirmed, as I find no significant relationship between ROA, ROE and OSS and FEMALE or ALB_GNI (see columns (4), (5) and (6) of Table 10.4). The effect on the return variables (ROA and ROE) is similar to the one on the yields as the coefficient for female is positive and the one for ALB_GNI is negative; however, the coefficients are not significantly different from zero. OSS is negatively influenced by both measures. Outreach measures therefore show a tendency to be slightly negatively correlated with returns. However, the effects on ROA, ROE and OSS are very small and not significantly different from zero. The significant outcomes therefore indicate the acceptance of all three Hypotheses for this data set. [117]

When including all MFIs in the analysis, without controlling for the number of diamonds, the results for Hypotheses 1 and 2 remain significant.[118] The regression estimation contains 4,454 observations and leads to similar coefficients, significant at the 1% level. The results are shown in the Appendix (Table 12.6). Regarding ROE and OSS, small differences result when all diamonds are included. ROE is positively influenced by FEMALE, significant at the 5% level, and OSS is positively connected to ALB_GNI (significant at the 5% level), indicating that lower outreach involves higher values of OSS. However, as stated before, some MFIs with low diamond scores report implausible results and these scarcely significant results are therefore probably not valid. This is the reason why for most of the analyses, I restricted the data set to MFIs with five diamonds.

The results lead to the suggestion that some of the previous studies have not focused on the best choice of variables, or have used an incomplete set of variables. Return figures are influenced by both costs and yield at the same time (controversially), and these both rise with depth of outreach. Most previous papers look at OSS, FSS, ROA or ROE and costs in relation to outreach. OSS is calculated by dividing operating revenue by operating expenses plus financial expenses and impairment losses. FSS measures whether MFIs are able to cover their costs (considering certain analytical adjustments) and is calculated by dividing adjusted financial revenue by total expenses adjusted for example, for subsidies and inflation (Rosenberg, 2009, 10). ROA and ROE are calculat-

[117] I additionally estimate the base regression using ALB instead of ALB_GNI and find the same results with respect to all three Hypotheses (see Table 12.5 in the Appendix).

[118] Number of diamonds classifies data and disclosure quality (see Chapter 7.4).

ed by dividing return by assets or equity, while return is calculated by subtracting costs from earnings (simplified). This means that all four measures are influenced positively by yield (earnings) and negatively by costs. Supposing that outreach has a positive impact on yield (argued by Conning (1999) and reinforced by the present study) and a negative impact on costs (supported by Hermes et al., 2011; Cull et al., 2007; and Conning, 1999 as well as by the present study) the net result is zero or a very weak effect on return measures. This could explain the weak and rather contradictory results found on the relationship between social and financial return in microfinance (see present study as well as Cull et al., 2007 and Quayes, 2011).

The results on YIELD and YIELDR and their relation to outreach raise the question as to how MFIs decide on the level of the interest rates charged. Di Bella (2011) analyses factors influencing interest rates in an empirical investigation using MFI data from the MIX. He shows that interest rate levels are positively influenced by the MFI's borrowing rates and confirms the results found here, that interest rates are inversely related to the average loan size and the age of the MFI (Di Bella, 2011, 29).

Interestingly, both FEMALE and ALB_GNI are twofold variables as they capture outreach and are also expected to have a direct influence on financial return by reducing default rates.

Other studies have looked at this by analysing the relationship between variables that are all used as independent factors in the present OLS regression. The studies analysing different data sets show for example that more female clients result in lower portfolio-at-risk, loan-loss ratio and write-offs as well as provisions, especially for NGOs with individual lending strategies and MFIs offering services other than loans (D'Espallier et al., 2009, 27). Existing research also reports that women usually ask for smaller loans and are more often involved in village lending and group lending (Hermes et al., 2011, 943). Assuming that village and group lending techniques lead to lower default rates, these two results both point to the fact that the involvement of more female borrowers comes with lower risk. Quayes furthermore argues that smaller loans are more likely to be repaid, leading to lower default rates and higher financial sustainability (Quayes, 2011, 3429). ResponsAbility reports the same results for their specific set of MFIs, stat-

ing that MFIs with a good score on their rADER[119] scale of social performance exhibit low default rates (responsAbility (ed.), 2011b, 11). They conclude that more social MFIs incur less financial risk.

To cross-check these results from literature, I analyse the effect of social factors on PAR30, the write-off ratio and the loan loss rate in my data set. I also find a significantly inverse relationship of FEMALE to all three factors (see Table 10.5, the same controls are used as in the basic regression). This means that the more female clients are served, the lower the measure of credit risk.

For the other outreach measure, ALB_GNI, however, the results were contradictory with a significantly inverse relationship to write-offs and the loan loss rate, meaning that larger loans come with lower write-offs and loan loss ratios. This result would imply that larger loans, probably distributed to somewhat wealthier clients, are repaid more reliably. Therefore, my findings are not aligned with findings from the literature with respect to loan size.

Table 10.5 OLS Regression Analysing Risk Measures (2004-2010)

VARIABLES	(1) PAR30	(2) WRITEOFF	(3) LOANLOSS RATE
FEMALE	-0.046***	-0.017***	-0.013**
	(-3.50)	(-3.09)	(-2.59)
ALB_GNI	0.004	-0.005***	-0.005***
	(1.22)	(-3.52)	(-4.09)
Controls	Included	Included	Included
Time Fixed Effects	Included	Included	Included
Constant	0.115***	0.035*	0.015
	(3.86)	(1.88)	(0.90)
Observations	1,508	1,493	1,507
R-squared	0.122	0.070	0.064

t-statistics in parentheses, calculated based on robust standard errors
*** p<0.01, ** p<0.05, * p<0.1

Dependent variables in this Table: PAR30 is the percentage of the total portfolio that is more than 30 days overdue, WRITEOFF is the percentage of the portfolio that is written off and LOANLOSS RATE is defaults in relation to portfolio. The two explanatory variables are the percentage of female borrowers (FEMALE) and the average loan balance in relation to the GNI per capita (ALB_GNI). All controls from the basic regression (Table 10.4) are included and defined in Chapter 10.5.1.

[119] For more information on rADER refer to Chapter 6.2.

Nevertheless, as causality is not clear here, the relationship could be vice versa, meaning that institutions facing higher risks distribute smaller loans (see also Mersland / Strom, 2010, 31). Therefore, results presented in existing literature and in Table 10.5 need to be interpreted with some caution.

Note that this analysis leads to the assumption that multicollinearity might be an issue in the main regression in Table 10.5; however, this issue is addressed below (Chapter 10.5.4.3).

10.5.3.2 CONTROL VARIABLES

SIZE exhibits a significantly negative impact on YIELD (at the 5% significance level) and OPEXP (at the 1% significance level) (see Table 10.4). In contrast, ROA and OSS are positively affected by SIZE. This means that small MFIs have higher costs but at the same time charge their customers higher interest rates. The net effect is a positive and significant influence on ROA and OSS. AGE shows a negative effect on YIELDR and YIELD, and a negative but insignificant influence on costs. The result for SIZE is in line with the outcomes of Cull et al. (2007), who find a positive relationship between AGE / SIZE and financial performance measures, such as ROA, FSS and OSS. One possible explanation for the negative interaction between YIELD and AGE / SIZE is that older and larger MFIs are able to reduce their operating expenses (by realising economies of scale) and thus allow lower interest rates.

Risk measured using PAR30 reveals a significantly negative effect (1% significance level) on ROA and OSS. PAR30 does not significantly influence YIELD / YIELDR which is because YIELD(R) captures gross interest revenues rather than the interest rate realised on the portfolio. Therefore, late payments do not influence portfolio yield. Operating costs are not influenced by late payments either; the significant effect on return measures is probably caused instead by higher provisioning motivated by rising PAR30 figures. The coefficient for LEVERAGE reveals a significant influence only on ROA and OSS, both negative. This means that higher leverage negatively affects performance, supporting the results of Quayes (2011). This might be caused by the high price for debt in the field of microfinance. For ROE the inverse relationship is intuitive as higher leverage comes at lower equity, which leads to a positive effect on ROE. Nevertheless, the coefficient is not significantly different from zero.

Regarding legal status, there is no significant difference between banks and the base variable NBFI. COOP shows a significantly lower yield accompanied by lower costs in relation to NBFIs. Lower costs are not surprising as voluntary work is in the nature of this type of institution. Results indicate that credit unions / cooperatives also use these lower costs to charge their clients less than the banks do. NGOs do not differ significantly from NBFIs in this regression analysis even though one might have expected NGOs to charge lower interest rates and realise lower returns. Other institutions perform better on yield, but worse on costs. However, there are only three observations for other institutions, so this result is not meaningful. Concerning different regions, Africa shows lower levels of return and higher levels of YIELD and OPEXP in comparison to East Asia and the Pacific, as expected based on the analysis in Chapter 8.2. Latin America and the Caribbean has higher levels of yield and costs than East Asia and the Pacific, and South Asia lower yield and lower costs as well as lower levels of ROA and OSS. The outcomes on legal status and region confirm the results described in Chapter 8.2 and 8.3, as the same database is used.

10.5.3.3 INVESTOR VIEW

In the present analysis, the focus is on the investor's view and therefore, the intention is to capture the financial measures that influence the return to the investor effectively. To identify the best measure, the correlation between several financial performance measures and the interest rates paid to the funders is analysed. The focus is on interest rates because the majority of funds still invest in MFIs by means of debt. For equity funds, of course, there are other factors that have an important influence on the valuation of MFIs. The correlation between the six financial measures used above and the interest rates paid to the funds is compared. Not all MFIs disclose funding information, and the MIX only started to collect this information in 2007, leading to a sample of 775 observations (see Table 10.6).

Portfolio yield is found to have the most significant relationship to interest rates paid to investors. The correlation coefficient of 0.307 is highly significant at the 1% level. The relationship of real yield to interest is also highly significant but less strong (0.224), which could be an indication that MFIs are not passing inflation effects on to the funds. Nevertheless, the causality of the relationship between interest rates charged by MFIs

and rates paid to funders is not clear. Di Bella (2011) for example argues that higher founding rates positively influence interest rates charged by MFIs (Di Bella, 2011, 28).

The interest rate is positively related to ROE and inversely related to ROA; however, the relationship is not significant. As a matter of completeness, I continue to use ROE and ROA as proxies for financial performance, because ROE in particular is considered to be the most common financial KPI for the evaluation of bank performance (European Central Bank (ed.), 2010, 5). OSS is inversely related to interest rates, although again not significantly.

The analysis also shows that operating expenses (OPEXP) are linked to the interest rate paid to the funds (see Table 10.6). This positive relationship means that higher costs are reflected in higher interest rates paid by MFIs to the funds and is rather counter-intuitive. Nevertheless, the relationships of YIELD and OPEXP to INTEREST remain statistically significant if each year (2007-2010) is analysed separately.

In summary, both the positive correlation of YIELD / YIELDR and OPEXP to INTEREST show that social performance comes at higher interest rates for the investor through higher portfolio yield and higher costs, both positively influencing interest rates.

Table 10.6 Pearson Correlation Coefficients: Interest Rates to Funders (2007-2010)

VARIABLES	(1) INTEREST	(2) INTEREST	(3) INTEREST	(4) INTEREST	(5) INTEREST	(6) INTEREST
YIELD	0.307***					
	(0.00)					
YIELDREAL		0.224***				
		(0.00)				
ROE			0.033			
			(0.36)			
ROA				-0.032		
				(0.38)		
OPEXP					0.204***	
					(0.00)	
OSS						-0.005
						(0.19)

P-Values in parentheses
*** p<0.01, ** p<0.05, * p<0.1

INTEREST stands for the interest rate that MFIs pay to funders. All other variables are the dependent variables used in the basic regression (Table 10.4).

10.5.4 REGRESSION DIAGNOSTICS

10.5.4.1 PANEL DATA

The variables for the analysis are collected at different points in time (panel data) and therefore, more than one observation per MFI is included. As a result, the assumptions on the underlying OLS-estimators may not be met, which may lead to inconsistent estimators (Green, 2012, 349 ff.). One way to control for biased observations is the random effects model, which is based on the assumption that the observations for one MFI would tend to be related to each other over time to a greater extent than the observations for different MFIs would be related to each other (Kohler / Kreuter, 2008, 255). This means that unobserved individual heterogeneity is assumed to be uncorrelated with the variables that are included.

Another way to handle panel data is to use of the fixed effects model. Using fixed effects makes sense when it is expected that an effect will vary over time and therefore needs to be estimated using dummy variables (measuring a group-specific constant term) (Green, 2012, 346 Wooldridge, 2003, 473). To decide which of the two models to use, a Hausman test is run (Green, 2012, 379) (see Table 12.7 in the Appendix). The null hypothesis states that the random effects model is preferred, while the alternative hypothesis favours the fixed effects model. This means that the null hypothesis does not expect the unique errors to be correlated with the regressors. In this study, the null hypothesis cannot be rejected so I use the random effects model to test the robustness of the OLS-regression (see Table 10.7).

The results of the random effects regression analysis do not differ from the standard OLS-regression using equal control variables. The significance and the sign of the coefficients do not change meaningfully. However, the coefficients for FEMALE decrease slightly when using the random effects model. The coefficients for ALB_GNI remain almost at the same level. As before, no significant relationship is found between ROA, ROE and OSS and the measures of outreach. This means that the OLS-regression led to meaningful results, even though longitudinal data is used.

Table 10.7 Results of the Random Effects Regression

VARIABLES	(1) YIELD	(2) YIELDR	(3) OPEXP	(4) ROA	(5) ROE	(6) OSS
FEMALE	0.102***	0.097***	0.072***	0.015	0.076	-0.010
	(4.882)	(4.05)	(5.23)	(1.16)	(0.46)	(-0.15)
ALB_GNI	-0.033***	-0.032***	-0.015***	-0.002	-0.006	0.008
	(-6.412)	(-5.342)	(-4.51)	(-0.71)	(-0.13)	(0.44)
Controls	Included	Included	Included	Included	Included	Included
Time Fixed Effects	Included	Included	Included	Included	Included	Included
Constant	0.640***	0.656***	0.622***	-0.0847**	-0.467	0.869***
	(10.22)	(9.76)	(15.37)	(-2.46)	(-1.05)	(4.98)
Observations	1,508	1,508	1,508	1,508	1,508	1,508
Number of MFIs	327	327	327	327	327	327

z-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The dependent variables in this Table are the following: Yield on portfolio nominal / real is the interest and fee income divided by average loan portfolio, OPEX is operating expenses in relation to total assets, ROA and ROE are return in relation to total assets and equity, respectively, OSS (operational self-sufficiency) is the degree to which operational income covers expenses. The two most important explanatory variables with respect to the Hypotheses are the percentage of female borrowers (FEMALE) and the average loan balance in relation to the GNI per capita (ALB_GNI). All controls from the basic regression (Table 10.4) are included and defined in Chapter 10.5.1.

10.5.4.2 OMITTED VARIABLES

In order to test for variables possibly omitted, I use a form of a fixed effects model. A dummy variable is included for each institution (MFI) to allow different intercepts (Wooldridge, 2003, 473). Although I include several control variables in the model, it is possible that some correlated variables are omitted. Specific characteristics of MFIs influencing both financial and social return at the same time would erase the relationship between financial and social factors analysed here and therefore lead to biased test results. One example would be that MFIs located in rural areas serve poorer clients while charging higher interest rates. This would mean that both variables are influenced by the regional allocation of the institution. Other than that, the mission of a particular MFI or the obligations imposed by donors or investors could lead to the service of poorer clients at higher prices. Also the management quality or the quality of human resources might influence both the dependent and the independent variables at the same time. To control for all possibilities of endogeneity, 326 dummy variables are included in the fixed effects regression accounting for all MFIs and using one as a reference group (see Table 10.8). The dummy variables control for all the time-constant, unobservable characteristics of the MFIs that could possibly affect the dependent variable

by monitoring the unobserved heterogeneity between MFIs (Wooldridge, 2003, 439). This is a very strong test, which controls for all the characteristics of the single MFIs that could possibly influence the relationship between the independent and the dependent variables.

With regard to the Hypothesis 1a (YIELD as dependent variable), the value of both coefficients decreases when including institutional fixed effects, with the one for FEMALE decreasing from 0.162 to 0.090 and the size of the coefficient for ALB_GNI decreasing from -0.042 to -0.031. This means that a part of the relationship between YIELD and the two outreach measures is eliminated by institution-specific factors influencing both of the variables. Nevertheless, the results demonstrate that the positive relationship between social performance and nominal yield persists with strong statistical significance at the 1% level even after the inclusion of fixed effects.

The effect for the real yield is only weakly significant on the 10% level in the fixed effects model for the variable FEMALE while the coefficient for ALB_GNI remains significant. However, the coefficients of outreach for real yield were already smaller than for nominal yield in the standard OLS-regression. The effect of outreach is stronger on nominal yield and therefore also persists in the fixed effects model. This could indicate that if MFIs adjust interest rates according to the characteristics of the client or the loan size, they do it on a nominal level, meaning they neglect the development of the national price level.

Regarding OPEXP, the significant effect of social return remains statistically significant for both outreach variables. Both coefficients decrease for OPEXP as well, with FEMALE decreasing from 0.108 to 0.071 and ALB_GNI from 0.020 to 0.012, indicating that some institution specific variables influence both the explanatory factors and the dependent variable OPEXP at the same time.

The coefficients of outreach and ROA, ROE and OSS remain statistically insignificant as in my original OLS model, meaning that Hypothesis 3 is again confirmed, even when taking unobservable effects into account.

Table 10.8 Fixed Effects Regression Using Dummy Variables for Each Institution (2004-2010)

VARIABLES	(1) YIELD	(2) YIELDR	(3) OPEXP	(4) ROA	(5) ROE	(6) OSS
Institution Fixed Effects	Included	Included	Included	Included	Included	Included
FEMALE	0.090***	0.052*	0.071***	0.023	-0.045	0.086
	(3.61)	(1.77)	(4.39)	(1.20)	(-0.14)	(0.70)
ALB_GNI	-0.031***	-0.029***	-0.012***	-0.005	-0.005	0.020
	(-5.38)	(-4.22)	(-3.11)	(-1.04)	(-0.07)	(0.69)
Controls	Included	Included	Included	Included	Included	Included
Time Fixed Effects	Included	Included	Included	Included	Included	Included
Constant	0.337**	0.546***	1.023***	-0.676***	-1.737	-0.790
	(2.48)	(3.42)	(11.56)	(-6.38)	(-0.98)	(-1.17)
Observations	1,508	1,508	1,508	1,508	1,508	1,508
R-squared	0.881	0.839	0.892	0.673	0.392	0.494

t-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The dependent variables in this Table are the following: Yield on portfolio nominal / real is the interest and fee income divided by average loan portfolio, OPEX is operating expenses in relation to total assets, ROA and ROE are return in relation to total assets and equity, respectively, OSS (operational self-sufficiency) is the degree to which operational income covers expenses. The two most important explanatory variables with respect to the Hypotheses are the percentage of female borrowers (FEMALE) and the average loan balance in relation to the GNI per capita (ALB_GNI). All other explanatory variables are defined in Chapter 10.5.1.

Not surprisingly, the R-squared increased strongly to between 80 and 90% as the inclusion of dummies for each MFI allows much of the variation of the dependent variable to be captured (columns (1), (2) and (3) in Table 10.8).

To conclude, all the Hypotheses are confirmed with strong significance, even when controlling for all institution-specific factors by including institution fixed effects.

10.5.4.3 MULTICOLLINEARITY

The definition of multicollinearity is a high degree of correlation between two or more independent variables in a regression model (Wooldridge, 2003, 97). To test for multicollinearity, I use a correlation matrix showing Pearson correlation coefficients between all the independent variables (see Table 10.9).

Correlations between the independent variables are rather low (below 0.5) indicating that no multicollinearity is present. The strong interaction of ALB_GNI and ALB is intuitive as both measures are based on the same values; however, I never use both factors in the same estimation. I find the highest correlation between female and average loan balance, the two social measures. The two variables interact negatively indicating

that female clients usually receive lower loans (supporting the results of Hermes et al., 2011, 943). The third rather strong correlation is between SIZE and AGE, which is not surprising, as institutions tend to grow with age.

Table 10.9 Pearson Correlation Coefficients and VIF to Test for Multicollinearity

	FEMALE	ALB	ALB_GNI	SIZE	AGE	PAR30	LEVERAGE
FEMALE	1.000						
ALB	-0.389***	1.000					
ALB_GNI	-0.400***	0.586***	1.000				
SIZE	-0.225***	0.189***	0.213***	1.000			
AGE	-0.086***	0.085***	0.180***	0.299***	1.000		
PAR30	-0.141***	0.071*	0.083***	-0.011	0.152***	1.000	
LEVERAGE	0.076**	-0.031	-0.017	0.010	-0.020	-0.001	1.000

*** p<0.01, ** p<0.05, * p<0.1

VIF	Hypothesis 1		Hypothesis 2	Hypothesis 3		
	YIELD	YIELDR	OPEXP	ROA	ROE	OSS
FEMALE	1.25	1.25	1.25	1.25	1.25	1.25
ALB_GNI	1.23	1.23	1.23	1.23	1.23	1.23
SIZE	1.17	1.17	1.17	1.17	1.17	1.17
AGE	1.15	1.15	1.15	1.15	1.15	1.15
PAR30	1.05	1.05	1.05	1.05	1.05	1.05
LEVERAGE	1.01	1.01	1.01	1.01	1.01	1.01
MEAN	1.14	1.14	1.14	1.14	1.14	1.14

In general, high correlations between control variables do not influence the result for the important variables (here social performance measures) (Wooldridge, 2003, 99). However, to ensure that these correlations do not influence the quality of the model, I calculate the variance inflation factors (VIF) of the variables in addition (see Table 10.9).[120] VIF values higher than 10 indicate multicollinearity (Wooldridge, 2009, 99). In the present regression study, the highest value of all VIFs is 1.25 indicating that multicollinearity is not an issue.

10.5.4.4 OUTLIERS

To assure that outliers in the data set do not distort the results, I conduct a specific regression analysis controlling for outliers. An outlier is, by definition, an observation that yields a strong change in the OLS-estimators if it is omitted (Wooldridge, 2003, 312). STATA[121] offers an automatic service to control for outliers in regression analyses by using iteratively-weighted least squares. This means that the more extreme an outli-

[120] The VIF is the inverse of 1-R^2, where R^2 is based on the regression of one independent variable on the other independent variables. Therefore, a higher R^2 leads to a higher VIF indicating multicollinearity (Bossow-Thies/Panten, 2009, 374 ff.).

[121] STATA is the data analysis tool / statistical software used.

er is, the less weight is attributed to it, and very extreme values are even dropped. The results are presented in the Appendix (see Table 12.8). For the regression that uses ROE as dependent variable, one observation is excluded altogether while in all regressions some observations have been attributed less weight. However, the six interesting correlation effects between social return (FEMALE and ALB_GNI) and YIELD, YIELDR and OPEXP remain statistically significant and for ROA, ROE and OSS there is still no significant effect.

10.5.4.5 BREADTH OF OUTREACH

For completeness, I also conduct the same analysis using the number of active borrowers (BORROWERS) served by the MFIs as a proxy for social return (breadth of outreach). For this purpose, I take the natural logarithm of the number of borrowers as the independent variable. The effect of the number of borrowers is significantly positive for YIELD and YIELDR, similar to the earlier identified effect regarding depth of outreach (see Table 10.10). OPEXP is positively related to the number of borrowers, also significant at the 1% level. This means that average yield and average operating costs rise with the number of borrowers and therefore again, outreach comes at higher revenues and higher operating expenses at the same time. The positive effect of BORROWERS remains for ROA providing an indication that institutions serving more clients are more profitable. The results therefore indicate that when looking at the number of borrowers as a proxy for outreach, Hypotheses 1 and 2 can be accepted, too. Hypothesis 3 in turn is rejected, as ROA is positively related to the number of borrowers. Nevertheless, all studies discussed earlier look at depth of outreach rather than breadth, and, therefore, the results reported in section 10.5.3 seem more important.

Table 10.10 Regression Analysis Using Breadth of Outreach

VARIABLES	(1) YIELD	(2) YIELDR	(3) OPEXP	(4) ROA	(5) ROE	(6) OSS
BORROWERS	0.065***	0.055***	0.039***	0.012**	0.036	0.007
	(6.618)	(5.734)	(6.507)	(2.274)	(0.898)	(0.254)
Controls	Included	Included	Included	Included	Included	Included
Time Fixed Effects	Included	Included	Included	Included	Included	Included
Constant	0.887***	0.684***	0.748***	-0.042	-0.377	0.822***
	(10.764)	(8.038)	(11.499)	(-0.804)	(-0.620)	(5.173)
Observations	1,508	1,508	1,508	1,508	1,508	1,508
R-squared	0.274	0.250	0.350	0.174	0.038	0.095

t-statistics in parentheses, calculated based on robust standard errors
*** p<0.01, ** p<0.05, * p<0.1

The dependent variables in this Table are the following: Yield on portfolio nominal / real is the interest and fee income divided by average loan portfolio, OPEX is operating expenses in relation to total assets, ROA and ROE are return in relation to total assets and equity, respectively, OSS (operational self-sufficiency) is the degree to which operational income covers expenses. Breath of outreach is measured as the number of borrowers served by an institution (BORROWERS). All other explanatory variables are defined in Chapter 10.5.1.

11. CONCLUSION

11.1 SUMMARY OF RESULTS

Overall low transparency in the microfinance industry makes data collection and comparability of microfinance investment vehicles difficult. To obtain a comprehensive picture of the sector, I combine information on microfinance investment funds collected by means of a survey with MIX data on microfinance institutions. A method for classifying microfinance investment funds is presented to compare and evaluate investment possibilities in microfinance. The results show that the funds vary in their structure, their special characteristics and the underlying portfolios. I apply classification information to generate an index including comparable funds to be used for benchmarking purposes. The degree of commercialisation, the regional focus and the risk exposure of a fund are the most important factors from an investor's perspective, and therefore these criteria would need to be addressed when more funds disclose performance measures.

From an investor's point of view, two aspects of microfinance are interesting: first, the possible diversification effects on existing portfolios, and second the social return and its potential relationship to financial return.

In order to investigate the first aspect, I calculate an index representing the microfinance universe using December 2003 as starting point. The analysis is based on monthly performance data collected by means of a survey and includes 19 funds in total. The data allows the calculation of one US Dollar index and one Euro index for funds mainly invested in debt. For each currency, an index applying an equally weighted approach and one using an asset-weighting technique is calculated. Both types of indexes show a steady positive development between 2004 and 2011, not influenced by the financial crisis starting in 2008. Both indexes grow in every month, with the exception of two months, when the USD MF index experiences a decline.

The comparison of the MF indexes with traditional and socially responsible indexes of the corresponding currency shows major differences in volatility and performance development. The debt MF indexes present lower levels of volatility (standard deviation) and they do not exhibit any correlation with socially responsible or traditional equity

indexes. Interestingly, the analysis of the emerging market debt index (JP EMBI) leads to similar results. However, the JP Morgan Global Government Bond Index shows comparable performance patterns over recent years, while the monthly performances are positively but insignificantly linked to the MF index. Still, there is something of a relationship between the two indexes, as, unlike all the other indexes analysed, neither is affected by the financial crisis. The fact that, to date, the performance of the funds has not been seriously affected by the crisis is interesting, and it reflects favourably on microfinance investments. However, the results should be viewed with caution, as there remains the possibility of a lagged impact of the crisis.

To investigate the second aspect, I conduct a comprehensive empirical regression on the relationship between the social and financial returns of microfinance institutions. Results strongly indicate that social return measured as outreach to the poor is positively related to financial return from an investor's perspective. Interest rates paid to funders and investors rise with depth of outreach caused by the MFIs' higher portfolio yield. Institutions seem to charge higher interest rates to poorer clients (measured using average loan size and percentage of female clients). Because operational expenses increase at the same time, the total influence on return measures (such as ROA, ROE and OSS) is very small and not statistically significant. Previous studies mostly focus on return figures. As returns are influenced by both yield and costs at the same time (controversially), the relationship to depth of outreach is (partially) erased.

Fund managers still do not put strong emphasis on including social factors in their investment decision processes. Several impediments are identified, including the belief that microfinance is social "per se", the existing lack of standardisation in the measurement of social performance, and lax regulation (Urgeghe, 2012, 18). However, in view of increased commercialisation of the industry and crises hitting several regions, the focus on social factors has gained importance.

The present study indicates that considering socially responsible elements in investment decisions might lead to increased financial performance, as the expected trade-off between social and financial factors does not seem to exist from an investor's point of view. Although charging poorer clients higher interest rates is not in tune with the social nature of the microfinance institutions, it appears to be necessary in order to cover

higher costs and to satisfy investors. Furthermore, a focus on social factors is important to ensure the future responsibility of the microfinance sector. Besides serving poor clients, funds can emphasise their social approach by signing social investment principles and informing investors about social performance. Profitable funds also have the possibility to favour the sustainable growth of institutions and thus the emergence of further investment options by providing capacity building and technical assistance to MFIs.

11.2 LIMITATIONS

Potential limitations to the current study are presented to guarantee an appropriate interpretation of the findings and to provide suggestions for future work.

For the index calculation and the classification of the funds, I use data collected by means of a survey filled in by fund managers. The possibility exists that some fund managers overstate their results or do not disclose certain important information. Because of a lack of existing databases, it is not possible to test for mistakes in the data file. I conducted some random tests for funds that provide information online or in Bloomberg and did not find disparities. However, it is unlikely that a fund that already provides information somewhere else would offer different data in the survey.

The index that is calculated and used for comparison with SRI and traditional indexes is limited to the survey respondents. A broader picture of the market would of course be useful. Furthermore, it is unfortunate that only the rather commercial debt funds were willing to disclose financial information on a monthly basis. This could result in a biased picture of the market, as commercial funds tend to be broadly diversified across countries and might be better prepared for potential crises.

Although index calculation on a monthly basis is appropriate, more frequent data collection might lead to more meaningful results, especially with regard to the comparison with other indexes.

I base the analysis of the interaction between financial and social return on MFI-level data in order to overcome data limitations. However, an investigation at fund level, reflecting the perspective of investors, could be even more significant from an investor's perspective.

Regarding data quality, using a database always entails possible inefficiencies or errors. Particularly in the used MIX data file, where MFIs report their data themselves, it is possible that data are overvalued or negative information is not reported. I address this potential for bias by including only MFIs that receive 5 diamonds by MIX in the main regression analysis.

11.3 OUTLOOK

As microfinance is a rather new field, there are still many opportunities for research. In particular, little has been done on the subject of microfinance investments.

Both of the special attributes of microfinance investments (diversification possibilities and the relationship between financial and social return) could be analysed in more detail. Diversification potentials could be examined at the fund level, as it is possible that different fund structures enable diverse degrees of diversification effect. It is assumed that less commercial investment funds facilitate even greater levels of diversification in comparison with other asset classes due to the special nature of the investment, which is strongly linked to other alternative asset classes.

As soon as processes are more standardised and (it is hoped) regulated, data from MFIFs should be comparable and it will be possible to analyse social return measures at the fund level. The definition of social performance aspects at the fund level is an approach that might entail the fund managers' readiness to focus on sustainability. Beside investment in social MFIs, funds can underline their social engagement by becoming signatories to social responsibility principles, or by providing technical support to MFIs. In order to emphasise the special nature of microfinance investments regarding social return, funds need to communicate and disclose social performance information to investors in a comparable and intuitive manner. The elaboration of tools to compare fund-level social performance and potentially link it to financial performance within a combined index must be the aim of future research projects in academics as well as in practice. Succeeding in helping the industry to become more transparent and encouraging the participants' willingness to disclose data lies at the root of future growth.

At the MFI level, a further topic for research is the definition and measurement of aspects of social return. Several approaches exist to provide a proxy for social return us-

ing wide ranges of MFI characteristics (e.g. using performance data by Microfinanza Rating, see Hoepner et al. (2012)).

Another issue raised by the current analysis that should be investigated further is that more socially orientated MFIs (from an outreach perspective,) seem to charge higher interest rates. This practice is understandable, as MFIs need to compensate for the potential default of such very poor clients and the higher than average costs. Such a research project could be based on theoretical work by Stiglitz / Weiss (1981) that analyse the equilibrium of credit markets and argue that the augmentation of interest rates could squeeze low-risk clients out of the markets. Furthermore, the fact that the poorest clients have to pay most would indicate a somewhat "unsocial" strategy. Additional analyses on the loan policies of MFIs might explain whether they actually adjust interest rates based on clients' profiles and loan sizes.

It will be interesting to observe and analyse the proceedings of the microfinance industry regarding return assessment and benchmarking methodologies of investments. In particular, the relationship between social return and financial factors and the influence of social factors on investors' satisfaction and interest in the topic will affect the industry and should be the subject of future research.

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12. APPENDIX

Table 12.1 Client Protection Principles

Appropriate product design and delivery
Prevention of over-indebtedness
Transparency
Responsible pricing
Fair and respectful treatment of clients
Privacy of client data
Mechanisms for complaint resolution

Source: http://www.smartcampaign.org/about-the-campaign/smart-microfinance-and-the-client-protection-principles (as of 13.08.2012).

Table 12.2 UN Principles for Responsible Investment (UNPRI)

1. We will incorporate ESG issues into investment analysis and decision making processes
2. We will be active owners and incorporate ESG issues into our ownership policies and practices
3. We will seek appropriate disclosure on ESG issues by the entities in which we invest
4. We will promote acceptance and implementation of the principles within the investment industry
5. We will work together to enhance our effectiveness in implementing the principles
6. We will each report on our activities and progress towards implementing the principles

Source: http://www.unpri.org/principles/ (as of 13.08.2012).

Table 12.3 Oneway Anova Analyses: Legal Status (2004-2010) Using 5,341 Observations

YIELD	BANK	COOP	NBFI	NGO
COOP	-0.057***			
	0.000			
NBFI	0.059***	0.116***		
	0.000	0.000		
NGO	0.054***	0.111***	-0.005	
	0.000	0.000	1.000	
RURBANK	-0.006	0.051***	-0.065***	-0.060***
	1.000	0.000	0.000	0.000
OPEXP	**BANK**	**COOP**	**NBFI**	**NGO**
COOP	-0.027			
	0.492			
NBFI	0.053***	0.080***		
	0.000	0.000		
NGO	0.084***	0.111***	0.031***	
	0.000	0.000	0.000	
RURBANK	-0.027	0.000	-0.079***	-0.111***
	1.000	1.000	0.000	0.000
ROA	**BANK**	**COOP**	**NBFI**	**NGO**
COOP	-0.001			
	1.000			
NBFI	0.001	0.002		
	1.000	1.000		
NGO	-0.013	-0.012	-0.014**	
	0.449	0.246	0.006	
RURBANK	0.018	0.019	0.017	0.031***
	0.536	0.219	0.219	0.000
PAR30	**BANK**	**COOP**	**NBFI**	**NGO**
COOP	0.018*			
	0.043			
NBFI	0.000	-0.018**		
	1.000	0.001		
NGO	0.010	-0.008	0.010*	
	0.605	0.871	0.019	
RURBANK	0.060***	0.042***	0.060***	0.049***
	0.000	0.000	0.000	0.000
ALB_GNI	**BANK**	**COOP**	**NBFI**	**NGO**
COOP	-0.9146***			
	0.000			
NBFI	-1.142***	-0.227***		
	0.000	0.000		
NGO	-1.480***	-0.566***	-0.339***	
	0.000	0.000	0.000	
RURBANK	-1.268***	-0.353***	-0.126	0.213*
	0.000	0.000	1.000	0.052

FEMALE	BANK	COOP	NBFI	NGO
COOP	-0.022 1.000			
NBFI	0.091*** 0.000	0.114*** 0.000		
NGO	0.217*** 0.000	0.240*** 0.000	0.126*** 0.000	
RURBANK	-0.015 1.000	0.007 1.000	-0.107*** 0.000	-0.233*** 0.000

*** p<0.01, ** p<0.05, * p<0.1

Anova analyses are calculated regarding the statistical significance of the differences in means (multiple comparisons using one-way Anova analyses) using all observations (all diamonds) between 2004 and 2010. The following legal forms are differentiated: BANK (bank), COOP (credit unions / cooperatives), NBFI (non-banking financial institution), NGO (non-governmental organisation) and RURBANK (rural bank).

Table 12.4 Oneway Anova Analyses: Region (2004-2010) Using 8,482 Observations

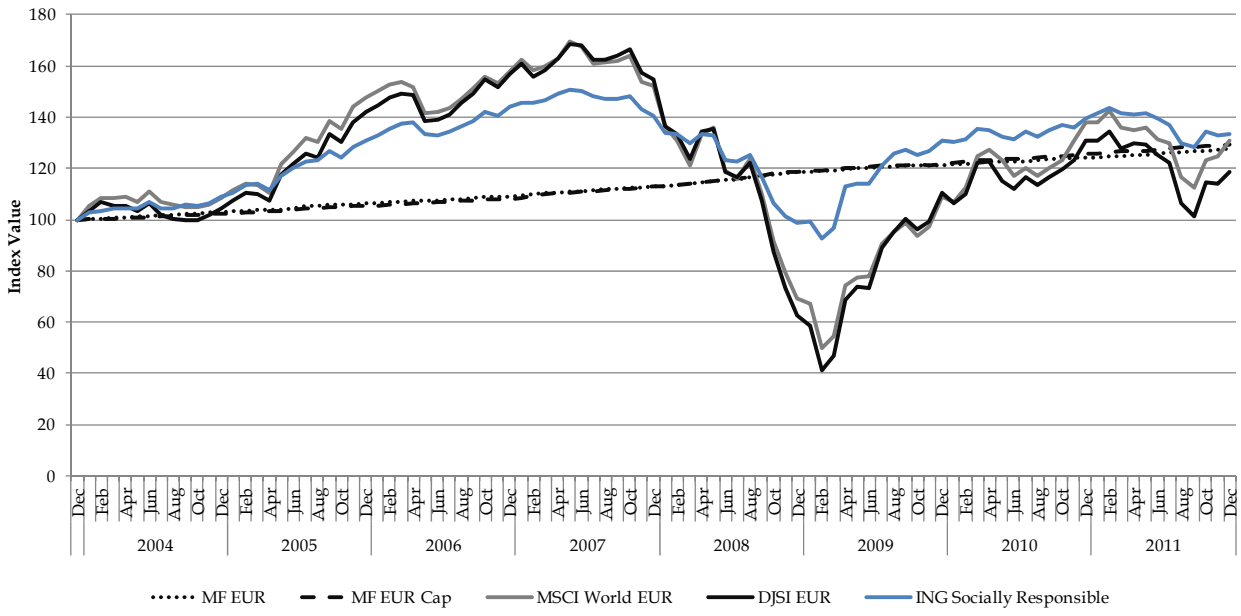
YIELD	AFRICA	EAP	ECA	LAC	MENA
EAP	-.0394*** 0.000				
ECA	-.0657*** 0.000	-.0263** 0.028			
LAC	-.0196 0.116	.020 0.167	.046*** 0.000		
MENA	-.075*** 0.000	-.036* 0.056	-.009 1.000	-.056*** 0.000	
SA	-.1466*** 0.000	-.107*** 0.000	-.081*** 0.000	-.127*** 0.000	-.071*** 0.000
OPEXP	**AFRICA**	**EAP**	**ECA**	**LAC**	**MENA**
EAP	-0.052*** 0.000				
ECA	-0.079*** 0.000	-0.027* 0.075			
LAC	-0.001 1.000	0.051*** 0.000	0.078*** 0.000		
MENA	-0.075*** 0.000	-0.023 1.000	0.004 1.000	-0.074*** 0.000	
SA	-0.105*** 0.000	-0.053*** 0.000	-0.026* 0.047	-0.103*** 0.000	-.0297 0.471
ROA	**AFRICA**	**EAP**	**ECA**	**LAC**	**MENA**
EAP	0.041*** 0.000				
ECA	0.062*** 0.000	0.021* 0.011			
LAC	0.027*** 0.000	-0.015 0.171	-0.035*** 0.000		
MENA	0.055*** 0.000	0.013 1.000	-0.007 1.000	0.028* 0.011	
SA	0.013 0.385	-0.028*** 0.000	-0.049*** 0.000	-0.014 0.115	-.042*** 0.000

PAR30	AFRICA	EAP	ECA	LAC	MENA
EAP	-0.025** 0.001				
ECA	-0.052*** 0.000	-0.028*** 0.000			
LAC	-0.027*** 0.000	-0.003 1.000	0.025*** 0.000		
MENA	-0.037*** 0.000	-0.012 1.000	0.016 0.759	-0.009 1.000	
SA	-0.038* -0.038	-0.013* 0.505	0.015* 0.072	-0.010 0.594	-.000902 1.000

*** p<0.01, ** p<0.05, * p<0.1

Anova analyses are calculated regarding the statistical significance of the differences in means (multiple comparisons using one-way Anova analyses) using all observations (all diamonds) between 2004 and 2010. The following regions are analysed: EAP (East Asia and Pacific), ECA (Eastern Europe and Central Asia), LAC (Latin America and the Caribbean), MENA (Middle East and North Africa), SA (South Asia) and AFRICA (Africa).

Figure 12.1 Comparison of MF Debt with SRI and Commercial Indexes EUR



Source: own research and Bloomberg, 29.2.2012.

Table 12.5 OLS Regression using Average Loan Balance Instead of ALB Divided by GNI per Capita (2004-2010)

VARIABLES	(1) YIELD	(2) YIELDR	(3) OPEXP	(4) ROA	(5) ROE	(6) OSS
FEMALE	0.176***	0.174***	0.114***	0.009	0.092	-0.041
	(4.26)	(4.44)	(4.78)	(0.66)	(1.44)	(-0.61)
ALB	-0.000***	-0.000***	-0.000***	-0.000*	-0.000	-0.000
	(-3.05)	(-3.48)	(-2.91)	(-1.66)	(-0.10)	(-0.10)
Controls	Included	Included	Included	Included	Included	Included
Time Fixed Effects	Included	Included	Included	Included	Included	Included
Constant	0.487***	0.308***	0.502***	-0.086	-0.570	0.857***
	(5.06)	(3.27)	(6.65)	(-1.40)	(-0.82)	(4.96)
Observations	1,508	1,508	1,508	1,508	1,508	1,508
R-squared	0.267	0.262	0.348	0.167	0.038	0.095

t-statistics in parentheses, calculated based on robust standard errors
*** p<0.01, ** p<0.05, * p<0.1

The dependent variables in this Table are the following: Yield on portfolio nominal / real is the interest and fee income divided by average loan portfolio, OPEX is operating expenses in relation to total assets, ROA and ROE are return in relation to total assets and equity, respectively, OSS (operational self-sufficiency) is the degree to which operational income covers expenses. The two most important explanatory variables with respect to the Hypotheses are the percentage of female borrowers (FEMALE) and the average loan balance in relation to the GNI per capita (ALB_GNI). All other explanatory variables are defined in Chapter 10.5.1.

Table 12.6 OLS Regression: All Observations (all Levels of Diamonds) (2004-2010)

VARIABLES	(1) YIELD	(2) YIELDR	(3) OPEXP	(4) ROA	(5) ROE	(6) OSS
FEMALE	0.170***	0.160***	0.084***	0.016	0.311**	-0.043
	(8.70)	(8.77)	(5.59)	(1.30)	(2.32)	(-0.63)
ALB_GNI	-0.015***	-0.015***	-0.010***	0.001	0.015	0.023**
	(-2.69)	(-2.79)	(-2.79)	(1.19)	(0.99)	(2.03)
Controls	Included	Included	Included	Included	Included	Included
Time Fixed Effects	Included	Included	Included	Included	Included	Included
Constant	0.583***	0.427***	0.666***	-0.150***	-0.759	0.862***
	(12.04)	(9.40)	(8.450)	(-3.803)	(-1.64)	(5.70)
Observations	4,454	4,454	4,454	4,454	4,454	4,454
R-squared	0.259	0.258	0.127	0.067	0.032	0.041

t-statistics in parentheses, calculated based on robust standard errors
*** p<0.01, ** p<0.05, * p<0.1

The dependent variables in this Table are the following: Yield on portfolio nominal / real is the interest and fee income divided by average loan portfolio, OPEX is operating expenses in relation to total assets, ROA and ROE are return in relation to total assets and equity, respectively, OSS (operational self-sufficiency) is the degree to which operational income covers expenses. The two most important explanatory variables with respect to the Hypotheses are the percentage of female borrowers (FEMALE) and the average loan balance in relation to the GNI per capita (ALB_GNI). All other explanatory variables are defined in Chapter 10.5.1.

Table 12.7 Hausman Fixed Random

VARIABLES	Coefficients (b) fixed	(B) random	(b-B) Difference	S.E.
FEMALE	0.0896349	0.1028247	-0.0131898	0.0133225
ALB_GNI	-0.0310991	-0.0331338	0.0020347	0.0026627
SIZE	-0.0184711	-0.0179053	-0.0005658	0.0011118
PAR 30	-0.0418316	-0.0507644	0.0089328	0.0100792
LEVERAGE	-0.0000246	-0.0000253	7.00E-07	2.64E-06

b = consistent under Ho and Ha; obtained from xtreg

B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(5) = (b-B)'[(V_b-V_B)^(-1)](b-B)

= 3.14

Prob>chi2 = 0.6791

Table 12.8 OLS Regression Using Iteratively Weighted Technique for Outliers

VARIABLES	(1) YIELD	(2) YIELDR	(3) OPEXP	(4) ROA	(5) ROE	(6) OSS
FEMALE	0.122***	0.105***	0.078***	0.004	0.003	-0.031
	(8.42)	(7.13)	(9.07)	(0.70)	(0.18)	(-1.04)
ALB_GNI	-0.032***	-0.035***	-0.014***	-0.002	-0.010**	-0.001
	(-7.98)	(-8.37)	(-5.61)	(-1.06)	(-2.07)	(-0.11)
Controls	Included	Included	Included	Included	Included	Included
Time Fixed Effects	Included	Included	Included	Included	Included	Included
Constant	0.589***	0.453***	0.470***	0.045***	-0.201***	0.987***
	(14.449)	(10.931)	(19.364)	(2.923)	(-4.090)	(11.662)
Observations	1,508	1,508	1,508	1,508	1,507	1,508
R-squared	0.340	0.326	0.386	0.288	0.230	0.265

t-statistics in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The dependent variables in this Table are the following: Yield on portfolio nominal / real is the interest and fee income divided by average loan portfolio, OPEX is operating expenses in relation to total assets, ROA and ROE are return in relation to total assets and equity, respectively, OSS (operational self-sufficiency) is the degree to which operational income covers expenses. The two most important explanatory variables with respect to the Hypotheses are the percentage of female borrowers (FEMALE) and the average loan balance in relation to the GNI per capita (ALB_GNI). All other explanatory variables are defined in Chapter 10.5.1.

Figure 12.2 Print Screens Questionnaire

University of Zurich[UZH]

RESEARCH PROJECT ON BENCHMARKING MICROFINANCE INVESTMENT FUNDS

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Welcome! Thank you very much for participating in our survey	
Purpose	The Center for Microfinance at the University of Zurich, Switzerland, is currently conducting research on microfinance investments in the framework of a PhD thesis project of Ms. Julia Meyer. Within Julia's project, we are focusing on microfinance investment funds, especially their performance and structure. In this context, we contact you as a representative of one of the major microfinance investment funds.
Confidentiality	Of course we will maintain absolute confidentiality of the responses received. Julia will use the fund data only for research purposes and in a strictly anonymous and peer-group-based form. We assure you that she will handle the data with utmost care, no need to say that no one else will have access to it.
Your contribution	In order to get preferably meaningful results, we are dependent on your assistance and would be pleased to count on your contribution. The survey consists of three parts and demands no longer than 15 Minutes.
Macros	**Enable Macros** to use this form easier.
Proceeding	Please try to fill in as much information as possible and follow the two steps below: **Sheet 1:** General Information **Sheet 2:** Performance: Annually, Biannually, Quarterly or Monthly
	Start the survey with a click on the following button (Open Input): Open Input
Deadline	Please return the completed survey by **November 30th** latest to julia.meyer@business.uzh.ch.
Results	The main goals of the PhD thesis are to build peer groups of microfinance investment funds and to calculate appropriate benchmarks. After having finished the evaluations, we would be pleased to exclusively send you Julia's results and provide you with a detailed overview on the current state of the microfinance investment universe.
Contact Details	Please feel free to contact me for more information or questions: Julia Meyer E-Mail: julia.meyer@business.uzh.ch Tel.: +41 44 634 31 70 Center for Microfinance, Department of Banking and Finance, University of Zurich
Thanks	We are looking forward to receiving your answers and would like to thank you in advance for your interest and support.

University of Zurich[UZH]

Open Input | Go to: General Information | Go to: Performance | Enable Content/Macros to use this form easier

1) General Information		
Year of Inception	n/a	
Periodicity of Valutation	n/a	
Currency	n/a	
Date	25. 10. 2011	
2) Investment	**31. 12. 2010**	**Hints**
Investment Types	**Please adjust date here, if data available for 2011**	
Do you use different share classes for institutional investors vs. public investors?		Yes / No
Number of share classes		Type number here
Name different share classes here		Describe share classes: for example A / T
This form is filled in for the following fund and share class:		If possible use one form for each fund and share class
Return		
Type of the Investment		Put here for example commercial / quasicommercial / non-profit
Benchmark		Hint: Which index is used as a benchmark?
Target return		In %
Expenses		
Total Expense Ratio		In %
Management Fees		In %
Operating Expenses		Either Total or as % of Assets
Investment Objective		
Target Investors		Hint: Put here for example other MIVs / Institutional / Private / Public / Retail / HNWI
Mission / Objective		Describe Mission / Objective in a few words
Target MFIs		Hint: Put here for example profitable MFIs / near and approaching profitability MFIs / development MFIs / NBFI / NGOs / Credit Unions / Consumer Lending Companies
Term of the Vehicle		Hint: Put here for example Fund / Holding / CDO / Structured Product etc. / open-ended / closed-ended Fund
For Equity Investments: Valuation Method used for MFIs		Hint: Put here for example Discounted Cash Flow / Market Value / Multiples / Net Asset Value if you have investments in Equity
Is your fund traded with a premium (agio)?		Yes / No
Subscription Periodicity		For example daily / weekly / monthly / quarterly / yearly
Redemption Periodicity		For example daily / weekly / monthly / quarterly / yearly
Minimum Subscriptions		For example 10,000

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3) Portfolio of the Fund	31.12.2010	Hints
Assets	**Please adjust date here, if data available for 2011**	
Total Assets		in
Microfinance Portfolio		In % of Total Assets
Portfolio		
Microfinance Portfolio in Equity		In % of Total Portfolio
Microfinance Portfolio in Debt		In % of Total Portfolio
Microfinance Portfolio in Guarantees		In % of Total Portfolio
Liquid Assets		In % of Total Portfolio
Indirect investment in Microfinance		In % of Total Portfolio
Direct investment in Microfinance		In % of Total Portfolio
Diversification		
Top One Country Exposure		In % of Total Portfolio
5 Largest Country Exposures		In % of Total Portfolio
Largest MFI Exposure		In % of Total Portfolio
5 Largest MFI Exposures		In % of Total Portfolio
Number of Countries		
Number of MFIs invested in		
Regions (%)		
Eastern Europe & Central Asia		In % of Total Portfolio
Latin America & Caribbean		In % of Total Portfolio
East Asia & Pacific		In % of Total Portfolio
South Asia		In % of Total Portfolio
Middle East & North Africa		In % of Total Portfolio
Sub-Saharan Africa		In % of Total Portfolio
Other		In % of Total Portfolio
Total	**0.0%**	**Please adjust portfolio until the sum is 100%**
Portfolio Quality		
Portfolio at Risk > 30 days (PaR 30)		Portfolio Quality of the underlying MFIs
Write off Ratio		Portfolio Quality of the underlying MFIs
Currencies (%)		
Portfolio in Hard Currency		In % of Total Portfolio
Portfolio in Local Currency (Hedged)		In % of Total Portfolio
Portfolio in Local Currency (Unhedged)		In % of Total Portfolio

4) Social Performance Indicators	31.12.2010	Hints
Number of Clients served		Put here number of clients served by MFIs you are invested in, explain if overall number of clients of all MFIs invested in or calculative part of clients respective to the fraction you are invested in each MFI
Average size of loan		In
Average loan balance per borrower / GNI per capita		In %
% Female clients		In % of total clients
% Rural clients		In % of total clients
Did you start to implement the Client Protection Principles? If yes, when?		Yes, Year / No
Do you provide your investors with information on ESG?		Yes / No
Did you adopt the UNPRI (Principles for Responsible Investment)? If yes, when?		Yes, Year / No

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Open Input | Go to: General Information

Please either fill in the form below or send your performance track record (net asset values) for as many periods as possible **up to today** in a seperate excel file, thank you!

Currency	0							
Year	2000							
	Jan. 00	Feb. 00	Mar. 00	Apr. 00	May 00	June 00	Jul. 00	Aug. 00
Net Asset Value								
	Jan. 00	Feb. 00	Mar. 00	Apr. 00	May 00	June 00	Jul. 00	Aug. 00
Return (%)								

CURRICULUM VITAE

PERSONAL DATA

Name	Julia Meyer
Date of Birth	June 17, 1982
Nationality	Swiss

EDUCATION

2011 - 2013	**PhD Student,** Center for Microfinance, Department of Banking and Finance, University of Zurich
2002 - 2006	**Master in Economics**, University of Zurich
1997 - 2002	**Matura (Type B)**, Kantonsschule Zürcher Oberland, Wetzikon

PROFESSIONAL EXPERIENCE

10.2011 - Present	**Research Assistant** at the Center for Microfinance, University of Zurich
07.2009 – Present	Part-time **Research Assistant** at the Chair of Accounting, University of Zurich
06.2009 – 09.2012	**Co-Founder and Managing Partner** "Jeremy Gleave" GmbH
09.2007 – 06.2009	**Consultant** at IFBC AG
04.2006 - 07.2006	**Research Assistant** at the Centre for Energy Policy and Economy, ETH Zurich
08.2002 - 09.2002	**Internship** at the Cantonal Bank of Zurich